

***United States Court of Appeals
for the Second Circuit***



APPENDIX

77-4057

IN THE UNITED STATES COURT OF APPEALS
FOR THE SECOND CIRCUIT

Nos. 77-4057, 77-4067,
77-4068, 77-4073,
77-4074, 77-4075

AMERICAN TELEPHONE AND TELEGRAPH COMPANY, ET AL.,
Petitioners,

v.

FEDERAL COMMUNICATIONS COMMISSION
AND UNITED STATES OF AMERICA,

Respondents,

MCI TELECOMMUNICATIONS CORP., ET AL.,

Intervenors.

On Petition for Review of Orders of the
Federal Communications Commission

JOINT APPENDIX TO THE BRIEFS

VOLUME IV

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COMMENTS OF
AERONAUTICAL RADIO, INC.

Aeronautical Radio, Inc. (ARINC), hereby submits its comments in response to the Commission's Notice of Inquiry and Proposed Rulemaking released July 5, 1974, 47 F.C.C.2d 644 (1974).

I. INTRODUCTION

Aeronautical Radio, Inc., as the communications company of the air transport industry, has provided services and facilities to members of that industry for 45 years. In the beginning, ARINC provided intercity communications and air-ground service by means of facilities which it leased from the air transport industry. Now, more than four decades later, ARINC's service to the industry is accomplished by a mix of ARINC-owned equipment, ARINC-leased equipment and facilities and services acquired by ARINC from communications common carriers.

Because of the tremendous importance of common carrier services to ARINC and its industry, ARINC has been an active party to numerous rulemaking and rate making proceedings before this Commission, including, inter alia, the Private Line Cases (Dockets 11645-46), the Telpak Case (Docket 14251), the Private Line/Telpak Case (Docket 18128), the Computer Services Inquiry (Docket 16979), and has participated in preparatory work for, and served on the United States delegations to, conferences of the International Telecommunications Union (ITU) and the CCITT.

The instant proceeding promises to be one of major significance to all users and purveyors of common carrier services. The Commission states in its Notice that it "has before it a number of matters which raise in one form or another the basic question of whether, and under what conditions, subscribers of the various service offerings of communications common carriers should be allowed to resell such services to others or to participate with others in the sharing or joint use of such services, and, if so, whether and to what extent the Commission should regulate any such resale or shared use." 47 F.C.C.2d at 644.

Specifically, the Commission observed that "Aeronautical Radio, Inc. may order service 'for the transmission of communications to, from, within and between air carriers.'" Id. at 652. However, contrary to the implication in the Commission's Notice, this customer recognition of ARINC should not be viewed as an "exception" in carrier tariffs, but

rather recognition by American Telephone and Telegraph Company (AT&T), Western Union Telegraph Company, and other communications common carriers of their statutory obligation under §201(a) of the Communications Act to provide service "upon reasonable request." ARINC's role in the provision of telecommunications services to its industry has been recognized since its founding, and the communications services ARINC now receives from the carriers are a reasonable and legitimate response to ARINC's needs in serving the air transport industry and the traveling public.

Through the foresight of early pioneers of aviation and of members of the Federal Radio Commission, the airline industry formed its communications company in 1929 to assist in assuring the safety, efficiency, and economy of flight through the provision of both point-to-point and mobile communications services. Because ARINC's history is unique and bears on many of the issues in this proceeding, the next portion of this presentation (Part II) will be devoted to a description of the evolution of the air transport industry's need for communications and ARINC's response to that need.¹ As an industry communications company which has operated successfully for 45 years without direct regulation, its experience should be relevant to this inquiry.

¹ Further information on the importance of ARINC's telecommunications services to the air transport industry is contained in the separately filed statements of the Air Transport Association of America and those of its members, Allegheny, Eastern, and United Air Lines, and in the statements of Air Midwest and Air Wisconsin contained in Appendices B and C, infra.

In the final section (Part III), ARINC will respond to the specific questions enumerated in the Commission's Notice of Inquiry.

II. THE EXPERIENCE OF ARINC AND THE
AIR TRANSPORT INDUSTRY IN INTER-
CITY COMMUNICATIONS AND MESSAGE
HANDLING

A. The Formation of ARINC in 1929.

In 1929, the Federal Radio Commission addressed the air-ground-air and point-to-point communications requirements of the fledgling air transport industry in conferences with representatives of the industry. As a result of these conferences, ARINC was incorporated on December 2, 1929, and the Commission reported to Congress:

"In order to coordinate more closely their radio activities and to assure dependable and adequate communications the air transport companies formed a cooperative communications company for the aviation public and known as Aeronautical Radio (Inc.). Practically all companies which are operating radio-equipped aircraft are members."
Federal Radio Commission, 4th Annual Report,
at 70 (1930).

Though, in form, ARINC was, and remains today, a Delaware business corporation, the company in fact rendered its services on a not-for-profit, cost-sharing basis, a corporate policy which has prevailed to the present time. The company, from its inception, has been owned and controlled by the industry it serves. As of today, 99% of its stock is held by air carriers (trunk, regional, commuter, and U.S. and foreign flag), and the remaining 1% by various

general aviation (i.e., non-air carrier) interests. ARINC's present Board of Directors is drawn from domestic trunk and flag carriers, regional carriers, general aviation, and ARINC management.

B. Intercity Communications by ARINC High Frequency Radio Stations.

At the time of ARINC's incorporation and for a number of years thereafter most intercity communications relating to air carrier operations were conducted over high frequency aeronautical fixed stations. Initially, ARINC provided these communications by manual radiotelegraphy (CW), but in due course in the 1930's, this was supplemented by HF radiotelephone.

Thus, in fulfillment of its Commission-recited responsibility "to assure dependable and adequate communications" for its industry, ARINC became the FCC licensee of hundreds of radio stations throughout the country which provided the air transport industry with its intercity point-to-point communications. ARINC also became the licensee of the ground stations which were being implemented to provide the newly emergent air-ground "mobile" radiotelephone and radiotelegraph communications to aircraft.

These ARINC-licensed radio stations handled the full range of intercity messages relating to air carrier operations including messages dealing with air traffic control, weather, dispatch, passenger reservations, air mail, cargo, and other communications relating to the conduct of

the operations of the air carrier. In essence, all of these categories related to the safety, efficiency, and economy of air carrier operations. ARINC was the "single licensee" of the aeronautical enroute (mobile) and the aeronautical fixed (point-to-point) stations in the United States.

C. The Advent of ARINC's Use of Common Carrier Private Line Service.

As the volume of airline point-to-point communications grew in the mid-thirties, the availability of leased lines from communications common carriers began to have an impact upon the industry's intercity communications. When the desirability of using leased lines for intercity communications became increasingly apparent, ARINC sought to order and administer these private line services in much the same way it then provided point-to-point service over HF radio channels. In due course, the Commission in 1937 upheld that right. Aeronautical Radio, Inc. v. AT&T, 4 F.C.C. 155 (1937).

The Commission in the 1937 ARINC case, stressed the general importance of communications to safety in the operations of air carriers and concluded:

"After careful consideration of the whole record in the light of the Communications Act, and the rules and regulations adopted pursuant thereto, the Commission finds that a rapid, efficient, dependable, coordinated system of communications is necessary at all times for the safety of operation of airplanes on the airways." 4 F.C.C. at 163.

The Commission was clearly cognizant of the obligation of common carriers under §201(a) of the Communications Act to

provide service upon "reasonable request therefor."² See 4 F.C.C. at 160, 166. In that connection, and on the question of whether an applicant for service must have a "direct interest" in the "content" of the messages sent over the facilities ordered from a carrier, the Commission enunciated this principle:

"It must be concluded that no interest in the content of the messages handled is necessary, but that it is sufficient if the fact that the message is sent aids the lessee [customer] in carrying out purposes of its own distinct from those of a communication carrier for hire." Id. at 164.

The result of the Commission's holding was that ARINC was recognized as AT&T's "customer" in ordering circuits from AT&T to carry airline messages in much the same manner and scope as were permitted over the aeronautical fixed stations licensed to ARINC.³

²Communications Act §201(a), 47 U.S.C. §201(a) (1970).

³ The "Scope of Service" for aeronautical fixed stations is set forth in the FCC Rules as follows:

"Aeronautical fixed stations shall provide all necessary non-public point-to-point communications service pertaining to safety, regularity and economy of flight." §87.453 of the Rules.

The similarity in function performed by ARINC's aeronautical fixed stations and private line services is also reflected in FCC Rules which provide today that:

"Aeronautical fixed station authorizations will not be issued where land line facilities adequate for the service required are available." §87.451 of the Rules.

Aeronautical operational fixed ("private microwave") stations are available for the same communications as well as "other aeronautical operations," and are not subject to the condition that land line facilities be unavailable. See §§87.123, .461 of the Rules.

These private line circuits, though to be ordered by ARINC from the common carriers, were not to be physically "operated" by ARINC employees, nor did the circuits run to ARINC premises. In 1937, ARINC exercised "supervisory control" over the operations of the stations licensed to it by the FCC, but did not use its own employees to operate the equipment.⁴ Private line circuits provided improved service

⁴ In 1937, ARINC owned no radio equipment. Rather, it leased equipment from the airlines, for a nominal sum, which equipment was located on airline premises and operated by airline employees. ARINC maintained supervisory control over its facilities through a small headquarters staff. In the Commission's words:

"In 1935, complainant [ARINC] held 245 station licenses in the aviation service. The equipment of all stations is owned by the several air transport companies on whose lines the stations are situated. Said equipment is leased to the complainant corporation [ARINC] by said transport companies for the consideration of \$1.00 per year. All radio stations licensed to the complainant are manned by personnel who are employees of the transport companies on whose lines the particular stations are located, and the personnel is paid by said transport companies. The complainant exercises a supervisory control over all stations, the licenses being in its name and it having authority to cause the stations to be operated in such manner as to render a maximum of service to the air transport industry and to itinerant flyers using the airways, and to comply with the Rules and Regulations of the Commission." 4 F.C.C. at 157.

Today, ARINC employs hundreds of persons and has invested more than \$11 million in capital equipment, including radio. ARINC's own employees physically operate many aeronautical radio stations and physically transmit millions of messages over some, but by no means all, private line circuitry ordered by it. But the current operations came as an evolution after World War II and were not implicit in the 1937 decision.

and reliability over HF radio links and progressively supplanted HF domestically. Internationally, however, ARINC still operates three HF circuits -- one to the Bahamas, one to Haiti, and one back-up circuit to Cuba.

While the volume of private line services ordered by ARINC, and by the airlines, grew steadily, other means of providing intercity communications became a matter of interest to the industry.

D. Increased Interest in ARINC Microwave Systems.

The rate level and structure of common carrier private line services which evolved in the 1940's and 1950's was not wholly satisfactory, and interest in an ARINC microwave system for the industry grew. Indeed, by 1950, ARINC had installed and begun operation of various small microwave systems throughout the country.⁵

Thus, in 1953, when the Commission inquired into the use of microwave frequencies for the distribution of "theatre television," ARINC sought expressly to assure the preservation of sufficient microwave frequencies to support a nationwide aeronautical microwave system. ARINC evaluated the use of microwave and submitted to the Commission a "Proposed Aeronautical Fixed Microwave Relay and Integrated Aeronautical Mobile Radio System."⁶

⁵See pp. 41-45, infra, for a more detailed discussion of ARINC's experience with private microwave. Today, ARINC's microwave systems provide it with some 5,300 circuit miles of dedicated channels.

⁶See Statement of Witnesses and Testimony by Aeronautical Radio, Inc., submitted January 12, 1953, in FCC Docket 9552.

Subsequently, in 1955, Arthur D. Little, Inc., was authorized jointly by ARINC and the government's Air Navigation Development Board to make a comprehensive engineering and economic study regarding the future of aeronautical communications. In the words of the Arthur D. Little report, the study was undertaken "because serious doubts exist, both in industry and Government, as to whether present communications are functionally adequate, and whether they can effectively deal with future aeronautical requirements."⁷ The Arthur D. Little report recommended that a nationwide aeronautical communications system be operated by ARINC to handle both airline and government communications, including the use of private microwave facilities.

In 1957, ARINC and the Air Transport Association of America (ATA) further delineated the aeronautical requirements for an ARINC private microwave system in testimony submitted in the Above 890 Mc/s Case (Docket 11866). In this proceeding, ARINC and ATA proposed the use of microwave for centralized reservations, operational functions, and data processing systems in support of air carrier operations. The Commission's decision in 1959 broadened eligibility for private microwave systems and added a further spur to the development of this service by permitting government agencies

⁷Arthur D. Little, Inc., "Report to Aeronautical Radio, Inc. -- Engineering and Economic Recommendations for Future Aeronautical Communications," at 1 (January 31, 1955).

right-of-way companies, and rate-regulated entities to share private microwave systems. Above 890 Mc/s, 27 F.C.C. 359 (1959), reconsideration denied, 29 F.C.C. 825 (1960). This decision led directly to the filing by AT&T of its Telpak tariff.

E. The Telpak Tariff.

In the face of the growing interest in private microwave systems on the part of the airline industry and others, AT&T on January 16, 1961, responded to that threat by filing its "Telpak" tariff whereby it offered bulk-priced private line services with rates structured to resemble the cost characteristics of private microwave systems. The Telpak tariff offered "sharing" privileges among government agencies, and rate-regulated industries, similar to the FCC-permitted sharing of private microwave systems as adopted in the Above 890 Mc/s Case.

AT&T explained its new tariff as follows:

"The development of microwave radio makes it technically and economically possible for non-common carriers to supply their own communication facilities in a form which meets these bulk requirements. Many private microwave systems have been constructed for the limited group of licensees who have heretofore been eligible under F.C.C. rules. No one who is familiar with the 'Above 890' proceeding can doubt that under the Commission's new licensing policy the demand for private microwave systems will increase rapidly. (There is an analogy in the rapid growth of motor transportation following governmental programs of highway improvement.) Unless the common carriers offer service comparable

in form and price to private microwave systems, both existing and future business will be diverted from the common carriers in ever increasing proportions.

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TELPAK is designed to meet the situation outlined above. It makes use of the wide frequency bands available in Telephone Company plant to provide the customer with the features available to him in the use of a private microwave system. The rate structure is in two elements: a flat monthly rate per mile for the basic transmission path and monthly rates per channel terminal for the various types of channel he wishes to use. Thus, as in the case where he builds his own system, the customer having paid for his base path, can add channels as desired at relatively little added cost. Sharing of a TELPAK channel is permitted generally under circumstances where the Commission would permit sharing of private microwave systems."⁸

As predicted by AT&T, the original Telpak rates were competitive with the cost of a private microwave system. This, coupled with the large-scale introduction of jet aircraft over domestic routes, touched off an explosive growth in aeronautical private line communications. During the early 1960's the major airlines embarked upon extensive centralization of reservations, administrative, and dispatching functions; inaugurated, with ARINC, sophisticated on-line (intra airline) and inter-line (between airlines) message switching facilities; and made substantial investments in

⁸ Letter from L. E. Eastmond, Administrator, Rates and Tariffs, AT&T Long Lines, to Secretary, FCC, February 10, 1961.

data processing hardware and software. During the decade following the filing of Telpak, aeronautical use of private line services grew more than ten-fold. With bulk communications available through Telpak, these airline service improvements spread throughout the airline industry -- all enhancing service to the public.

As an industry entitled to "share" Telpak, the industry initially relied upon ARINC to "administer" most of the industry's shared Telpaks. Although ARINC and the airlines were probably more successful than other industries in cooperating and sharing Telpak, this system fell far short of the efficiency and equity which should and could be achieved for the industry. Thus, in 1966, ARINC undertook new studies of an industry private line network whereby ARINC would exercise its right to be the "customer" (sometimes referred to as the "single customer") of the system rather than relying upon the Telpak tariff's "sharing" provisions.⁹ In effect, ARINC would revert to its old "single-licensee" role as licensee of the HF aeronautical fixed stations for inter-city communications, the same role it also would play as operator of an industry-wide private microwave system.

The Commission, in the Telpak Sharing Case (Docket 17457), recognized that ARINC's customer status most closely

⁹ This ARINC "customer" network study began before any challenge had been filed against the Telpak "sharing" regulations, and the ARINC private line network was implemented some two years before the Telpak "sharing" regulations were cancelled in December 1971.

met the competitive necessity created by ARINC's private microwave alternative:

"Under the single customer concept in Telpak, ARINC as the customer, could order the appropriate Telpak configurations and circuitry and then assign circuits to the airlines as their needs required. This is the same role that ARINC could perform as the single licensee of a private microwave system. On the other hand, the testimony was that shared Telpak is not comparable to either such single licensee private microwave or Telpak with a single customer feature, in terms of efficiency and flexibility. Under shared Telpak, the testimony was that it is often necessary for sharing parties to anticipate their communications requirements by ordering 'spares' to accommodate such potential requirements, whereas this situation would not arise under either Telpak with a single customer feature or under a single licensee private microwave system. Additionally, under shared Telpak, if the airlines' requirements are not sufficient to justify a Telpak rate, ARINC states that it notifies the airlines that it does not have enough requirements to justify Telpak, whereas under a Telpak single customer arrangement, it would be possible to fulfill all of the airlines' communications requirements, thereby providing the kind of efficiency and flexibility available under a private microwave alternative." Telpak Sharing, 23 F.C.C.2d 606, 610-11 (1970).

F. The Initiation of ARINC's PLIN System.

On September 12, 1967, ARINC ordered a nationwide private line system from AT&T with ARINC as the "customer." On July 31, 1969, AT&T amended its Private Line Tariff F.C.C. No. 260 to insert paragraph 2.2.1(G) which, in effect, recognized ARINC's status as its "customer" for communications "to, from, within and between air carriers."¹⁰ Western

¹⁰In filing its order in September 1967, ARINC sought no change in AT&T tariffs, relying instead on its entitlement to service as a customer in its own right under the Communications Act-- a position it maintains today. See pp. 59-61, infra.

Union filed a similar clause, and the tariff revisions became effective without protest or controversy on September 1, 1969. Three months later, December 1, 1969, the ARINC nationwide Private Line Intercity Network (PLIN) was implemented with ARINC as the "customer."¹¹

During the following year, ARINC, by virtue of its being the "customer" of the industry's private line system, was able to increase the economic efficiency of the system by more than 10% over that which obtained in the industry's "shared" network. ARINC as customer of the network was obligated to control the configuration of the system, and thus, ARINC launched a program to develop sophisticated computer software to obtain computerized optimization of the PLIN network. Some \$240,000 has been invested by ARINC in the development of this network design software which automates the process of network optimization and ordering procedures to the greatest extent practicable.

Today, the PLIN network consists primarily of interstate Telpak C and D sections, together with intrastate Telpak A, B, C, and D sections, single channel IXC facilities,

¹¹ ARINC immediately faced a severe test only two months after PLIN's inception of coping with the February 1, 1970, Telpak rate increases which increased the rates by more than 40% and changed the telegraph to voice equivalency from 6:1 to 2:1. Because of centralized management, ARINC was able promptly to reoptimize the network under the new rates.

supplied by AT&T, Western Union, and the Associated Bell Companies, and an increasing quantity of channels supplied by specialized common carriers.¹² These circuits provide service between some 3400 city pairs. Thus, the complexity of the network optimization problem is substantial, particularly in view of an average 1,000 to 1,200 "changes" in the network each month resulting from airline orders to ARINC. The network consists of some 17,500 circuits, providing 4.7 million voice-equivalent circuit miles of service. The magnitude of this problem is illustrated by a comparison of the point-to-point "demand" network shown in Figure 1 with the optimized PLIN network shown in Figure 2, on the following pages. ARINC has also invested some \$800,000 in multiplex equipment with which it derives 6.5 data circuits from common carrier voice-grade circuits.

PLIN is ARINC's domestic point-to-point communications network which is used in providing a number of ARINC services including its air-ground, electronic switching, and private line services. An understanding of the importance of PLIN to the air transport community can be obtained from a review of ARINC's current services, domestic and international.

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The first circuits from specialized common carriers were ordered by ARINC in March 1973. As of November 20, 1974, ARINC has 135 specialized common carrier and domestic satellite circuits installed and another 167 circuits on order.

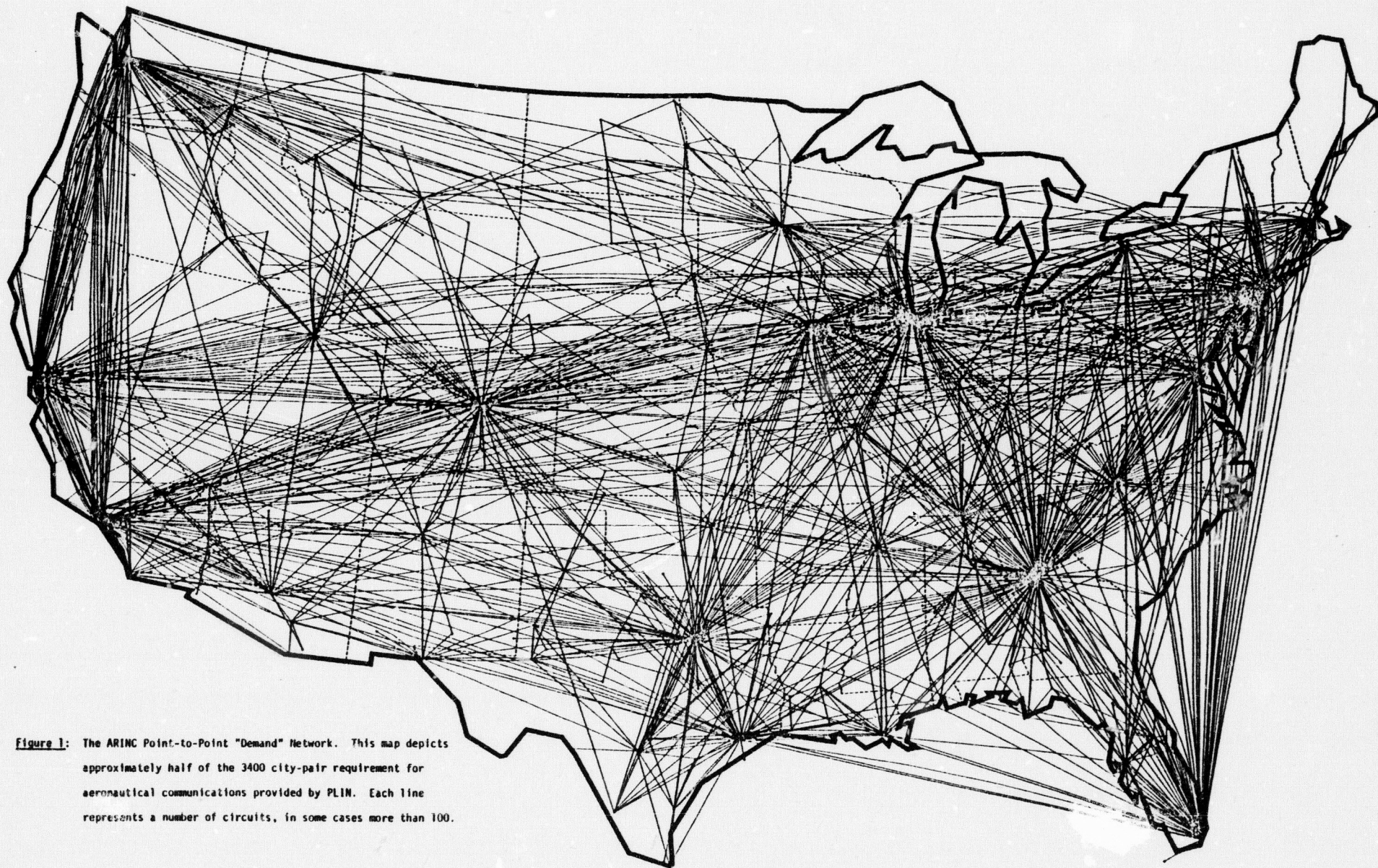
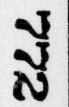


Figure 1: The ARINC Point-to-Point "Demand" Network. This map depicts approximately half of the 3400 city-pair requirement for aeronautical communications provided by PLIN. Each line represents a number of circuits, in some cases more than 100.



G. ARINC's Current Services.

ARINC provides the air transport industry with aeronautical communications services utilizing: domestic and international leased private line service; modern data processing and message handling computers; TDM and FDM channel derivation equipment; private microwave radio stations; point-to-point HF radio stations; air-ground HF radio stations; air-ground VHF radio stations; land mobile UHF radio stations; and various items of associated hardware. These facilities are integrated through ARINC into a communications system which meets the communications needs of the various sectors of the air transport industry.

ARINC serves almost 900 aircraft operating and service agencies and other aeronautical interests representing the full spectrum of civil aviation -- from the smallest operator of general aviation¹³ up to the world's largest air carriers. The 19 U.S. trunk, flag, and regional airlines account for about 77% of ARINC's services, and 117 foreign flag airlines account for about 11.5% more. ARINC's 738 other users, which include 101 other scheduled and supplemental air carriers and general aviation, make up the remaining 11.5%.

Although the communications provided by ARINC are part of an interrelated nationwide and worldwide communications system, it may be easier to understand the various means

¹³ ARINC's most recent shareholder is an individual who operates a single sail plane.

through which service is provided by discussing the major services separately.

1. Air-ground radio services.

ARINC is the licensee of some 1,600 air-ground VHF and HF radio stations which provide communication with aircraft in flight.¹⁴ These stations utilize advanced concepts of the radio art to provide reliable aeronautical communications throughout the conterminous United States, in Hawaii, in Puerto Rico, the Virgin Islands, and on overseas routes from the United States gateways. Domestically, ARINC provides VHF coverage over substantially all of the United States for aircraft operating at altitudes of 10,000 feet above mean sea level or 5,000 feet above the terrain, whichever is higher. Messages handled by these stations include reports of position, weather, fuel and aircraft operational status, passenger needs, and all other information relating¹⁵ to the safe and efficient operation of the flight.

¹⁴With the exception of a few stations operated by arrangements with foreign administrations, all of ARINC's air-ground stations are licensed pursuant to Subparts E (Aeronautical Enroute Stations) and F (Aeronautical Metropolitan Stations) of Part 87 of the Commission's Rules which obligate ARINC to use its facilities to provide "all necessary non-public service, HF and VHF, of the particular class authorized without discrimination to any aircraft station licensee who makes cooperative arrangements for the operation and maintenance" of the stations. §87.291(a) of the Rules; see §87.327 of the Rules. The Commission's Aviation and Marine Division of the Safety and Special Services Bureau maintains cognizance over these services.

¹⁵Federal Aviation Regulations require domestic air carriers to maintain, "independent of any system operated by the United States," "a two-way air/ground radio communication system . . . that will ensure reliable and rapid communications, under normal operating conditions, over the entire route . . . between each airplane and the appropriate dispatch office" 14 C.F.R. §121.99 (1974).

ARINC operates some 400 of the VHF aeronautical radio stations in network configuration. These networks consist of a number of stations operating on a common channel tied together to a common control point by use of ARINC's PLIN lines, private microwave, or a combination of PLIN lines and microwave. To prevent audio heterodynes ("loud whistles") created when the aircraft receives signals from more than one station at a time, the stations employ off-set carriers; that is, the carrier frequencies of nearby stations are off-set by at least 4 kHz, and the resultant heterodynes are eliminated through the use of audio filters in the aircraft receivers. The rest of the some 1,200 domestic VHF stations (non-network) provide limited in-range and specialized coverage to accommodate the increased terminal area communications requirements of aircraft immediately before and after take-off and landing. Such stations are linked to the airline dispatch office by
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PLIN circuits.

On overseas routes, ARINC operates high frequency single side band gateway stations in the vicinity of New York,

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Many of the ARINC radio stations are operated today by employees of ARINC's users, subject to ARINC's control, as was the case of all ARINC stations during the 1930's. ARINC exercises control over these stations through its control program under which the ARINC station representative (usually a supervisory employee of ARINC's user) is bound to ARINC by personal contract, and by contract with the user, to assure compliance with both the Commission's Rules and ARINC's rules. The ARINC station representative is also responsible for making monthly reports to ARINC. ARINC enforces its rules and control over its stations by periodic inspections of these stations by ARINC management.

Miami, San Francisco, New Orleans, and Honolulu. These stations provide operational control and air traffic control communications over the North Atlantic, Caribbean, and the various Pacific Major World Route Areas (MWRA's)¹⁷. In addition, ARINC has installed extended range VHF stations at a number of domestic gateways which, through the use of directive antennas and high power, provide reliable VHF service to aircraft operating on international air routes more than 300 miles from shore at normal operating altitudes. These VHF facilities relieve the scarce HF channels of congestion from terminal area communications, and on many overseas routes, such as the New York-to-Bermuda route (almost 800 miles), extended range VHF techniques have eliminated the need for HF communications altogether. These and other air-ground facilities of ARINC are designed to provide the optimum in flexibility to meet the differing requirements of different aircraft operators, while at the same time providing a unified nationwide system.

2. Electronic Switching System (ESS).

In the late 1950's and early 1960's, it became apparent to the air transport industry that improved message handling facilities were needed for both on-line (intra-company)

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ARINC not only serves aircraft operators, but also by contract with the Federal Aviation Administration (FAA), ARINC relays air traffic control messages between the FAA's ARTCC stations and aircraft in flight.

and inter-line (between companies) ground communications to provide service to the public in the jet age. ARINC's message centers had long utilized the electromechanical message handling equipment supplied by common carriers. These facilities simply were inadequate to provide the rapid, accurate, multi-address message switching functions required by the industry. This led to the development and implementation in early 1963 of ARINC's Electronic Switching System (ESS).

ESS is ARINC's computer-based store and forward message switching system whose principal function is to serve as the universal interface among the airlines. It supports the air transport industry's requirement for expeditious exchange of information within an airline, between airlines, or between an airline and a support source, essential to the safety of life and property in the air and the efficient, economic conduct of air transportation. The span of communications characteristics which can be accommodated by ESS extends from those of a simple teletypewriter terminal to those of a highly protected, multi-channel medium-speed (i.e., 1200-9600 bps) computer link.

The system has grown with the increased interdependence of the major airlines and the greater integration of the commuter air (or "third level") carriers into the nation's air transportation system. In 1971, ARINC began to cut over to new "third-generation" computers located at ARINC's communications center in Chicago. By the end of 1973, there were more than 180 members of the air transport industry using

ESS, and the daily volume reached 1.6 million messages. The system now consists of four Control Data Corporation M1000 processors and four Collins C8400 processors in Chicago, two Collins C8400 in Cedar Rapids, and one Honeywell 716 in Honolulu. These are linked together and linked to the stations and computer systems of the air transport industry by PLIN circuits.

ESS is used today for flight operations such as the delivery of pilot air-ground messages to and from the ARINC radio operators located in ARINC communications centers via PLIN circuits to the airline dispatcher. Airport terminal runway data are routinely transmitted by FAA Air Traffic Control to ESS. These data are collected, processed at night, and transmitted to the FAA and aircraft operating agencies in the early morning. ESS is also used to transmit pilot weather reports to the National Weather Service and, in the case of previously unreported severe weather, immediately to other airlines operating in the affected area.

A major ESS function is to facilitate airline passenger reservations. Through the medium of ESS, airlines can provide instant confirmed reservations from airlines throughout the world. The complexity of operation is illustrated by the dependence of the air carriers upon an efficient inter-line operation as well as on-line operation. United Air Lines estimates that 30% of its business is inter-line, and the National Air Transportation Association (NATA) estimates that 62% of the business of the commuter airlines is

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inter-line. Thus, not only must United account for the fact that its ticket offices in Modesto and downtown Washington, D.C., may be selling space on the same flight, it must also accommodate the fact that Allegheny's ticket office in Pittsburgh and Altair's ticket office in Wilkes-Barre are also selling space on the same United flight. Without an effective integrated communications system and without optimum use of modern data processing and ARINC switching facilities operated for the industry, such an operation would be a nightmare, and the ultimate loser would be a public which has come to rely upon the efficiency of air carrier operations.

The reservations data so stored is also used in preparing aircraft "weight and balance" reports used by airline operations personnel and subject to final approval by the flight's captain before takeoff.

ESS enhances service throughout the world by connection to FAA-operated facilities which are part of the worldwide Aeronautical Fixed Telecommunications Network (AFTN) and through connection to the international leased line and switching services of SITA. 19
ESS is in a constant state of flux to

18
See NATA, The Commuter Airline Industry -- Annual Report 1973, at 3.

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Société Internationale de Télécommunications Aéronautiques (SITA) is a Belgian company owned by a number of international airlines which provides international point-to-point aeronautical communications service on a not-for-profit basis using a combination of switching computers in many countries throughout the world interconnected by data circuits leased from a variety of international record carriers.

accommodate the growing and changing needs of the air transport community. Future growth may require further expansion and the use of regional concentrators. The alternatives are still under study to meet the industry's requirements as they evolve.

3. "Point-to-point" services.

ARINC point-to-point (intercity) services are provided over a variety of: common carrier private line circuits; ARINC private microwave circuits; ARINC HF radio circuits; and ARINC channel deriving equipment. ²⁰ ARINC's point-to-point services, along with its air-ground service, date from its earliest days when, as noted earlier, aeronautical point-to-point service was provided almost exclusively by HF radio stations licensed to ARINC.

ARINC's point-to-point services today, as in 1937, are confined to the classification of "aeronautical communications" -- those non-public point-to-point communications pertaining to safety, regularity, and economy of flight, and other aeronautical operations. These communications are virtually identical to those which ARINC would handle, and indeed does handle today, on private microwave systems licensed

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All of the major international common carriers -- AT&T, ITT, RCA Globcom, RCA Alascom, TRT, and WUI recognize ARINC as their customer for international circuits. A list of ARINC's international point-to-point services, common carrier and HF radio, is contained in Appendix A.

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under Part 87 of the Commission's Rules. In the case of
air carriers, because the total "business" of an air car-
rier relates to the safety, economy, and regularity of air-
craft operations, ARINC provides point-to-point communica-
tions today, as it has since the 1930's, for virtually all
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categories of air carrier point-to-point communications.

Today, aircraft travel farther and faster than in
1937, and many more people travel by air. Today, the crew
aboard the new wide-body jet aircraft, such as the Boeing
747, is larger than the normal passenger load of the old
workhorse DC-3 of prior years. Thus, the total require-
ments of the airborne community of some three to four hundred

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"Operational stations in the Aviation Services are author-
ized for link or control circuits or other aeronautical opera-
tions." §87.461 of the Rules (emphasis supplied).

22

Insofar as a non-air carrier user (e.g., a business aircraft
operator) of ARINC is concerned, the use of ARINC's point-to-
point facilities is in conjunction with ARINC services relat-
ing to its aircraft operations. For example, ARINC uses
private lines and private microwave to connect its remote air-
ground radio stations to its control point, and, once a mes-
sage is received from a pilot, ARINC may use its point-to-
point facilities to transmit the information either to a "dis-
patch drop" or other point designated by the business aircraft
operator. Such air-ground message delivery may also involve
the use of ESS. Thus, aeronautical communications initiated
by the business aircraft would travel from an ARINC VHF net-
work radio station over private lines and/or private microwave
circuits to the ARINC communications center where the data
would be received by an ARINC radio operator. The message
would then be transmitted over PLIN lines to ARINC's ESS cen-
ter and from there be switched to the ESS terminal at the
aircraft operator's dispatch office.

persons traveling at speeds up to 600 mph before, during, and after their flight has expanded enormously from those of the smaller, slower aircraft of the 1930's. Thus, the nature of today's operation by the nation's air carriers has intensified their dependence upon communications.

Moreover, because of the requirements of the air transport industry for efficient management functions, the airlines have invested hundreds of millions of dollars in advanced computer systems, most of which depend upon rapid²³ and real-time communications facilities.

The management of an air carrier, especially a scheduled air carrier, presents a unique information problem today. For example, United Air Lines at the end of 1973 operated 369 aircraft serving 92 cities requiring the support of more than 49,000 employees. These employees are spread out among thousands of ticket offices, baggage depots, maintenance bases, and other locations, all of which must act in concert to assure that the aircraft operating between the cities at 600 mph will serve the public with maximum safety, comfort, and convenience.

Some of the specific airline functions served by ARINC's point-to-point services are described below.

a. Reservations and passenger service.

As was the case in 1937, a large subcategory of aeronautical communications handled today by ARINC relates

²³ As an industry with heavy investment in computer systems, the air transport industry also uses computers for off-hour batch processing of management information. Batch processing is less dependent upon communications facilities, but nonetheless benefits from its availability.

to aircraft space, weight, and air worthiness, including reservations. In 1963, the first sophisticated PNR (Passenger Name Record) systems were developed for certain airlines. These systems represented a significant advance over earlier reservations systems, enhancing the efficiency of airline operation and service to the public. Since 1963, PNR systems have spread to all the certificated scheduled air carriers operating in the United States, to all of the major foreign flag carriers, and to many of the commuter air carriers.²⁴ The PNR systems store the name and itinerary of the passenger, whether he has been ticketed, and a local telephone number for contact should there be any changes in the flight. By identifying each passenger as an individual, PNR systems can also identify special requirements of individual passengers, such as the need for special meals (e.g.,

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PLIN especially benefits the small air carriers by integrating them into the nationwide air transportation system and by making available to the third level and other small air carriers the benefits of bulk communications rates and centralized communications management which would not otherwise be available. In addition, these communications facilities have fostered the growth of sophisticated PNR hardware which is offered by air carriers and other data processing companies to the small carriers. Braniff, Delta, Continental, and United are all active in making PNR and other computer services available to smaller air carriers. A non-air carrier, Control Data Corporation, uses its computer in Atlanta to provide data processing and PNR reservation systems to a number of commuter and other air carriers, including, for example, Altair, a third-level carrier headquartered in Philadelphia. Altair uses a medium-speed data circuit obtained from ARINC between Philadelphia and the Atlanta computer site. ARINC also provides a single medium-speed channel for access by all of the air carriers using the CDC computer to ARINC's ESS in Chicago.

diabetic) or the need for special services (e.g., small children or invalids). Before PNR systems were instituted, whenever a reservation was made, an entry was made, usually manually, against the flight regardless of whether the passenger had been ticketed. Thus, there was no way of telling how many real passengers should be expected. The PNR system reduced this problem by identifying each person, whether or not he was ticketed.

Communications requirements of a reservations system for a large air carrier today include an extensive network of "foreign exchange" lines which funnel reservation calls into either a limited number of regional or single centralized reservations center. At a centralized reservations center the calls enter an automatic call distributor (ACD) and are distributed among a number of agents. This creates obvious efficiencies in the utilization of reservations agents and assures that people throughout the nation, even in smaller communities, are able to contact the airline to secure space or information concerning flights.

Some airlines also balance reservations traffic between regional centers, both nearby and across the continent, to assure the best service to the public. For example, some regional centers are closed at night, and all calls are transferred to a single center. This assures the passenger that information as to his reservation will be available to all agents throughout the country, should he call later to make any adjustments. Obviously, this centralization and

flexibility of reservations functions demands a reliable, economical, and flexible communications system such as PLIN.

The calls taken in the reservations centers result in a passenger name reservation being entered into the airline's reservations computer over ARINC PLIN facilities. (The reservations computer is rarely co-located with the reservation center.) The reservations computer makes the necessary adjustments in its seat inventory, and, if this is the last available seat, the computer automatically generates an availability status message over ARINC's ESS to close the flight to further sale. The passenger is then given the confirmed space on the aircraft. Should the flight involve connections with another carrier, these reservations are also made and confirmed immediately. This service to the public was impossible before widespread use of PNR systems and ARINC's ESS service.

It is axiomatic that the timeliness of ground support to air travel must be commensurate with the speed of air travel. For example, a person traveling by air to Appleton, Wisconsin, from Washington D.C., via Chicago, would consume only 2-1/2 hours of flight time, and he should not be required to spend several hours at Chicago attempting to secure a flight to Appleton. Today, one call to American Airlines can give the passenger confirmed reservations through to Appleton via Air Wisconsin leaving Washington's National Airport 7:30 a.m.

Eastern Standard Time and arriving in Appleton 9:40 a.m. Central Standard Time.

In addition to public convenience, the reservations systems also play an important role in the safety of aircraft operations. FAA safety regulations (see 14 C.F.R. §121.311) and good sense prohibit air carriers from carrying "standees." Every passenger must have a seat. Of course, as regulated entities, the cost of empty seats which would otherwise be filled²⁵ is passed on to the public. Thus, the system which permits optimum utilization of aircraft is beneficial to the public.

In addition, the data stored in the reservations computers are used by air carriers for aircraft weight and balance calculations. The amount of fuel to be boarded and the amount of cargo which can be accommodated in an aircraft depend significantly upon the weight of the passengers and passenger baggage to be carried. The air carriers routinely use the reservations data for this purpose, subject, of course, to final revision should there be a major departure from the information stored in the computer at flight time. In addition to the gross weight of the enplaned passengers,

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Not every seat in a given flight may be filled. Reservations are significant from the standpoint of planning for "blocked space." Many air carrier operations are over routes or into airfields which do not permit the full capacity of the aircraft to be utilized. The availability of an efficient reservations system permits safe load planning for these aircraft.

the aircraft balance is important. Aircraft are designed to operate with their centers of gravity within a relatively narrow envelope. Assignment of freight and baggage is planned on the basis of anticipated load calculated from reservations data.

Once the approximate aircraft takeoff weight is determined, the airline can use these data along with weather information to prepare and file a flight plan. To cope with today's fuel shortages, computerized flight planning is used to assure minimum use of fuel as well as maximum speed and efficiency. Again, the safety of flight is dictated by accurate advance knowledge of the number of passengers to be boarded obtained from reservations data, collected and distributed over ARINC PLIN circuits.

Another use of reservations data in flight safety relates to the assignment of flight attendants. The FAA prescribes the minimum number of flight attendants for certified air carriers (14 C.F.R. §121.391), and air carriers frequently carry additional flight attendants depending upon the anticipated load. The reservations data are used in assigning the number of flight attendants necessary to serve the passengers' convenience and to assure the passengers' safety. Flight attendants, like ARINC's communications system, are of significant service and convenience to the traveling public during routine operations. But, their presence is also dictated by safety concerns. During a flight, a flight attendant may be called upon to assist in alleviating

crises of passengers such as a medical emergency or may be called upon in the event of an aircraft emergency to evacuate the plane to assure the maximum safety of the passengers. But, the number of flight attendants required actually may depend upon the number of passengers to be carried, and this information is obtained from computer-stored reservations data.

Finally, the communications system also provides up-to-date information as to the progress and status of the flight for the public at large. The treatment of passengers must be different from the treatment of freight, and the public has an emotional concern with the progress of loved ones, friends, and associates who are flying on aircraft. Thus, many calls are made to the reservations centers concerning the estimated time of arrival of a given flight or whether or not it has arrived at its destination. This service, while not strictly a safety function, is clearly a passenger service function.

b. Flight dispatch and operations.

Under this category of use are included the entire efforts of the air carrier in getting its aircraft safely from its point of departure to its intended destination. Under FAA Rules, scheduled trunk and regional air carriers are required to have a positive dispatch form of operational control, and other air carriers are required, as a minimum, to have a flight following system. Under either set of rules, extensive communications facilities, both air-ground

and point-to-point are required. In either a dispatch or flight following system, the dispatcher or flight follower must keep track of the aircraft's progress and must alert the downline terminals of that progress.

Again, there is a dual safety and convenience function. The crews at the point of destination require the flight information to prepare to handle the passengers and baggage upon their arrival. Should delays, weather, or other problems arise during the flight which necessitate diversion of the flight, communications become essential to the operation in order to permit coordination of an alternate landing area and the handling of a passenger at the alternate landing area. Unlike freight, passengers cannot be left on the loading dock overnight. Accommodations and other preparations must be made for their safety and well being. The dispatch and flight operations network using PLIN lines permits this.

These communications facilities are also used to marshal the resources of the airline, possibly the aircraft manufacturer and other airlines in times of serious flight hazards. Once an aircraft leaves the ground, it cannot pull over to the side of the road for en route repairs. Should a system fail during flight, the crew must be in the position to repair the fault or operate the aircraft without the system. Safety features and preventive maintenance today minimize the incidence of in-flight system failures, but failures will occur, and the flight crew must have access to

the collective wisdom of the airline, the manufacturer, and others to solve the problems. Fortunately, ARINC's air-ground and point-to-point communications systems permit the flight crew to discuss the problem with knowledgeable engineering and maintenance people to determine what, if anything, can be done in flight to eliminate or alleviate the hazard presented by the system failure. These communications facilities are also used to coordinate ground emergency procedures undertaken in advance of the aircraft's arrival.

To the extent that a problem develops in flight which is merely a nuisance, but which does not affect the safety of the landing, such as a burned out indicator light, the ground flight operations facilities can be used to assure that the plane can be repaired at the next stop with little or no delay. In many cases, the airline may be confronted with a replacement of a part which could take as little as 15 minutes, if the ground crew has been alerted to the need in advance, has found the part, and has found a person qualified to install it. This may also require inter-line communication with other air carriers.

Flight operations also include crew scheduling problems. Safety and convenience limit the number of consecutive hours that a flight crew can work. Delays in flights due to weather or traffic can require changes to be made in flight schedules and new crews to be located and assigned to flights. This may entail finding crews in other locations

and having them transported to places where they are needed. For example, a crew delayed into St. Louis may not have enough hours left to continue the flight on to New York. The nearest crew qualified for the particular aircraft could be in Chicago. The use of the air-ground point-to-point communications system permits the airline to anticipate this problem and to transport the crew from Chicago to St. Louis, so that the flight may continue safely from St. Louis to New York with a minimum of disruption to the traveling public.

c. Maintenance, engineering, and stores.

The airlines have a substantial requirement for point-to-point communications in their ground maintenance of aircraft in constant use throughout the carrier's route structure which frequently extends across the United States. All of the aircraft have maintenance schedules for major overhauls, routine maintenance, and inspections which must be carried on at specified intervals. The larger air carriers have turned to the use of computers to keep track not only of the aircraft, but of individual components in the aircraft. By so doing, the aircraft requiring major maintenance can be scheduled through the maintenance base with a minimum of "down time," and therefore a minimum of cost to the traveling public.

In addition, the use of component inventories by aircraft permits the air carrier to schedule small repairs without disrupting the flight progress. A sub-system requiring repair or inspection can be pulled at an intermediate

point on the aircraft's itinerary and replaced with a repaired or inspected sub-system. Communications play an important part in alerting the ground crews of the airlines. In addition, the airlines do ground servicing and ground handling for one another at points which might not justify a full time crew for each individual airline. This coordination of maintenance activities between airlines also requires constant communication access.

To reduce the lost time on an aircraft, the air carriers also "pool" their spare parts. At many points, the airlines will agree as to which airline should store certain parts at a specific location. Avionics are frequently pooled, and when a malfunction occurs, the hardware is pulled, placed in the pool for repairs, and a fresh spare is installed in the airplane with little or no loss of time. Other parts, such as an engine for a Boeing 747, do not justify extensive stockpiling, but when needed, are needed immediately. Communications systems keep track and assist in the use of these spare items.

Additionally, ESS and dedicated ARINC PLIN point-to-point channels are used to access the inventories of the airframe manufacturers to ascertain the availability of needed parts. Once located, these can be automatically ordered, reducing the delivery time.

d. Administrative messages.

The far-flung operations of the nation's air carriers and the foreign flag air carriers make on-line and inter-line communications mandatory. Thus, communications are used for finances, administrative planning, and other communications necessary to keep their organizations operating efficiently.

Even here, there are direct safety applications. For example, United Air Lines obtains lines from ARINC for regular administrative briefings for their personnel throughout the country. At these briefings, problems and their solutions are routinely discussed among the various departments and offices of United Air Lines. By improving the efficiency and intercommunication among the personnel at United, safety and efficiency are promoted. But, these facilities also have a more direct relation to safety: these are the point-to-point facilities that are used during extreme emergencies to coordinate the activities of United, other airlines, the FAA, and other agencies during an aircraft accident or hijacking. Obviously, a complete emergency communications facility cannot be established on a moment's notice, but fortunately the facilities are there and available.

4. Other ARINC services.

Among ARINC's other services which rely heavily upon ARINC's point-to-point facilities is its "weather wire" service. Weather wire service is, in essence, an extension of

the FAA's national weather service, handled over PLIN circuits. Weather information is vital to the conduct of aircraft operations, and ARINC maintains weather terminals at its manned communications centers. Significantly, ARINC has been the customer of AT&T and Western Union for the government extension service which has provided weather service to air carriers throughout the country since the 1940's. See AT&T Tariff F.C.C. No. 260 ¶2.6.5.(A); Western Union Tariff F.C.C. No. 254 ¶2.6.5.(A).

H. Future Communications Services.

ARINC, of course, is investigating more efficient and more economical means of providing communications to the air transport industry. Among advances being currently reviewed are the following:

1. Advanced air-ground system.

Just as ARINC and the airlines pioneered the use of offset carrier networks to provide nationwide air-ground communications services during the late 1940's and 1950's, ARINC today, in conjunction with a number of air carriers, is investigating advanced air-ground systems utilizing digital techniques. Initial planning is for an air-ground-air "data-link" system which would supplement ARINC's current radio-telephone service. The system has the potential of accommodating expanded air-ground communications while at the same time conserving limited frequency spectrum.

The first step of the advanced air-ground system will be to use special data-link avionics in conjunction with a ground data system to automate the reporting of "out," "off," "on," "in" times. These are the instants the aircraft leaves the gate, leaves the ground, arrives back on the ground, and back in the gate. These events are critical to many airline functions such as flight dispatch and following, crew pay, crew scheduling, and maintenance scheduling. The reporting of the out, off, on, and in times will be generated automatically by sensors in the aircraft which data will be transmitted automatically, along with the identifying number of the aircraft, to ARINC's ground communications network and switched automatically to the appropriate airline computer. This system will eliminate the delay, expense, and cockpit burden inherent in manual intervention.

In addition, this initial data link system will have the ability to report fuel information entered manually by the flight crew.

Further, the system will be capable of using the digital channel to signal the activation of an associated radiotelephone voice channel. That is, there will be mutual "dial-up" access between the ground crew and the aircraft crew, improving significantly the efficiency of overall operations. Because of the availability of ground-to-air signaling, the flight crew will be relieved of the necessity for monitoring the ARINC channel continuously during flight.

Aside from the speed, accuracy, and frequency conservation inherent in this system, an important operational consideration is the simplification of cockpit procedures.

Needless to say, a sophisticated interconnected ground point-to-point communications system is required in association with the air-ground radio data-link system.

2. Advanced point-to-point systems.

ARINC also has under active review a number of projects to improve the efficiency and effectiveness of its domestic and international point-to-point communications services. Among them are:

a. ARINC "nodal-point" telecommunications network.

Most of ARINC's intercity circuitry is today used for voice communications for which ARINC's management is limited principally to circuit management. For ARINC's data services, ARINC, through ESS, is able to perform traffic management. That is, ESS through the use of electronic switching equipment can optimize the use of circuits for the message traffic offered. ARINC currently has under study the implementation of a nodal-point network using state-of-the-art computer controlled electronic switches to extend ARINC's traffic management functions to its intercity voice communications services.

Under the nodal-point network concept, ARINC would install computer-controlled electronic circuit switches at nodes throughout the country. One preliminary study indicates that the use of nodal switches at 18 different locations

could substantially decrease the amount of intercity private line circuitry required by ARINC. Many circuits used by the airlines and other aircraft operators must have nearly 100% availability, but many other services can endure availability as low as, say, 98% and even brief queuing times. Substantial savings in circuitry are possible by combining these circuits into intercity trunk groups.

Today, computer controlled solid state electronic voice circuit switches can provide the required grade of intercity service demanded by a user. In addition, software can be added to provide priority, call transferring, expanded intercommunication, automatic night diversion, "off-hook" service, and a host of network management functions to improve services and to reduce costs. ARINC is currently analyzing traffic data and cost parameters to determine the promise of such a system. Preliminary indications are that significant efficiencies and economies would accrue to ARINC and the industry were such a system implemented, and that the nodal-point telecommunications network is compatible with any combination intercity transmission service, including common carrier private lines, private microwave, and satellite systems. Such a system would also supplement functions of the advanced air-ground system.

b. ARINC-owned intercity transmission services.

ARINC's single largest expense today remains its point-to-point intercity communications facilities, principally

Telpak obtained from AT&T, Western Union, and the Associated Bell Companies. ARINC is continuing to evaluate the current offerings of the communications common carriers against the private system alternatives. The most obvious alternative remains an ARINC private microwave system.

ARINC has extensive experience with the design, installation, and operation of private microwave systems whenever the services of the common carriers have been shown to be inadequate or too costly. ARINC's experience with private microwave began with several systems installed by ARINC in 1947 in Cuba and Japan. These early systems were followed by similar multi-channel systems in Seattle, Los Angeles, and San Francisco. Later, in the early 1950's, ARINC installed an interstate microwave link to the top of Mt. Washington, N.H. and a 71-mile system from the Washington, D.C., suburbs to Fork Mountain, Virginia, to operate remote VHF sites. The Mt. Washington system was connected to private line facilities obtained from AT&T, and the entire system was controlled by ARINC from New York. The Fork Mountain system was controlled from Washington.

ARINC has also found it necessary to install and operate two extensive inter-island microwave networks in the Hawaiian Islands and in Puerto Rico and the Virgin Islands. The first ARINC microwave was installed in Honolulu in 1955, and by 1962, ARINC had expanded this system to a 24-channel, 5-hop system, used principally to operate its HF and VHF air-ground stations in the Islands.

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In 1964, ARINC installed a 3-hop system in Puerto Rico and the Virgin Islands, linking San Juan with St. Thomas and St. Croix. This system, which now has 39 channels in operation, is used to link ARINC's VHF air-ground stations with its San Juan communication centers, but is also used for "other aeronautical operations," such as foreign exchange type services, principally for reservations, dispatch, flight operations, and the like -- essentially the same functions ARINC provides in the conterminous United States over leased private line facilities.

Significantly, ARINC's practical experience with private microwave over the past three decades has involved the entire process of system design, site survey, installation, operation, and maintenance of microwave systems. Today, ARINC's microwave systems provide it with some 5,320 circuit miles of dedicated channels.

As discussed above, ARINC has also made a number of studies looking toward installation of a nationwide private microwave system to supplant as well as supplement the services of the common carriers. The evidence presented by ARINC in Docket 18128 -- evidence which has not been rebutted or challenged in any significant way -- establishes that providing service (at estimated 1980 levels) to the 893 service points (served by private line in 1970) utilizing private microwave extended by common carrier services would cost \$91.2 million a year compared to the cost of the same

services at current Telpak rates of \$149.7 million annually.

See ARINC Exhibits 5, 5A, 5B, 6, 7, 7A, 9 (revised), 10 (Docket 18128).

Construction of such a private microwave system to fulfill the requirements of the industry into the 1980's would require investment cost on the order of \$250 million. The continued litigation and uncertainty over the validity of the current high rates for Telpak service, coupled with the recent economic decline of the nation in general and the air carriers in particular, has kept this nationwide communications system in the planning stages. Additionally, the emergence of specialized common carriers and their willingness, along their routes, to compete more vigorously with the cost of the private microwave system than the Bell system may obviate the need for a private microwave system along those routes. Of course, should any of these factors change, ARINC and the industry are prepared to proceed with all or part of their plans along all routes.

Specialized common carriers and domestic satellite carriers have, during the past year, become established as viable purveyors of point-to-point services to ARINC. ARINC ordered its first MCI service in March 1973, and the services

Even at today's level of use, ARINC's studies show that its current network of Telpak and specialized common carrier services could be replaced by private microwave (extended by common carrier services, for only about \$38.1 million annually, about 9% less than the \$41.7 million Telpak would cost at the September 1, 1968, "interim" Telpak rates.

have proven to be reliable and useful. Since the beginning of this year, hundreds of circuits have been ordered, and as procedures are established for coordination with ARINC and with the involved carriers, it is expected that the service obtained from the specialized common carriers and domestic satellite carriers will grow in the next few years. Studies have shown that some 3,000 circuits out of the 17,500 now obtained are subject to handling by operating specialized common carriers upon completion of their current construction. Of course, the ultimate degree of diversion cannot be predicted at this time.

If competitive common carrier services are available along AT&T's high density routes, the possibility exists for ARINC to construct private microwave systems along AT&T's low density routes. Studies have shown a number of locations at which, though considered "low-density" by AT&T,²⁷ ARINC now terminates hundreds of circuits.

All of these matters are now under consideration by ARINC and the air transport industry, and ARINC's communications planning must respond to the correlation between available common carrier services and the industry's requirements.

I. ARINC's Role as Customer

ARINC is the customer of domestic and international common carriers for leased private line services and is the

²⁷

See AT&T Tariff F.C.C. No. 260 ¶3.1.6.

FCC licensee for private point-to-point radio facilities. As such, ARINC can provide the industry with the optimum balance of services needed to meet the total industry communications requirements. Many services now provided by ARINC, or now in planning, could not practicably be provided if the various air carriers individually were the customers for the services.

The 128 air carriers using ARINC's domestic private line services receive significant benefits as a result of ARINC being the unified source for their point-to-point communications requirements. Perhaps the most visible advantage is the cost saving to the industry over circuits individually purchased. The current PLIN network provides the industry with 4.7 million voice equivalent miles of service at a cost of about \$60.1 million annually. This service would cost many millions more were ARINC and the air carriers to purchase this service individually. However, it is unlikely that the air carriers would, in fact, convert directly to individual service. As discussed earlier herein, and in ARINC's testimony in Docket 18128, ARINC would need to respond by constructing a private microwave system or by turning to some other alternative source of communications.

Certainly an important aspect of the cost savings resulting from PLIN is the fact that the savings are made available to all air carriers, including the small air carriers which would not otherwise be able to receive the benefits

of bulk rates. By assuring effective and economic communications to all categories of aircraft operators, ARINC promotes the public's welfare in efficient air transportation.

As customer, ARINC provides substantial, costly, and complex network management functions. ARINC continually updates and manipulates an extremely intricate service network, a network which is becoming even more complex as the various specialized and domestic satellite common carriers become integrated into the total system. As noted earlier, a quarter of a million dollars has already been invested in network optimization software alone.

ARINC provides a single comprehensive circuit census to the air carriers each month. Prior to the institution of PLIN, this was not practicable, and the air carriers had difficulty in knowing at any given time what service they had in being. ARINC also renders each airline a single bill for line haul service. Before PLIN, an air carrier could receive literally hundreds of bills from AT&T, the Associated Bell Companies, and independent telephone companies.

The complexity of telecommunications today requires that ARINC provide telecommunications consulting services, especially to the smaller air carriers. ARINC's qualified telecommunications experts are available to the air transport industry, and ARINC also serves as a focal point for coordinating and consolidating the telecommunications expertise of the entire industry through such organizations as the Airlines Coordinating Committee for Telecommunications

Services (ACCTS) and through regional telecommunications
28 seminars.

Of inestimable value in planning for future communications and the handling methodology is the fact that ARINC has 1. session a day-to-day working knowledge of the industry's communications structure which enables it to make practical and prompt recommendations and implementation of technological advances. To proceed by written polls, questionnaires, and meetings in order to ascertain the intricate needs of a far-flung variegated industry cannot remotely be compared with the daily functioning of ARINC in its role as "customer," whereby it automatically has in its possession data essential for future planning and action.

As customer, ARINC is in a position to integrate customer-provided hardware and common carrier services in an optimal configuration. ARINC provides multiplex services to derive low-speed data services from leased medium-speed circuits and also provides teletype terminals. ARINC's future services which are currently in planning are predicated

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ARINC's most recent series of telecommunications seminars, to which all its domestic private line users were invited, covered the services available from the specialized and domestic satellite carriers and how these services were being integrated into PLIN. These seminars, held in New York, Washington, Chicago, and San Francisco, were attended by more than 70 airline representatives and included presentations by MCI, RCA Globcom, Southern Pacific Communications, CPI Microwave, Data Transmission Co., AT&T, and Western Union.

upon continuation of ARINC's current status. The ARINC nodal point network and the advanced air-ground system both rely upon the extensive use of voice circuit switching among ARINC-provided circuits. Such systems, both of which will substantially increase the efficiency of ARINC's use of radio, landlines, and personnel, could not be implemented were each air carrier required to provide its own circuitry rather than ARINC.

ARINC's customer status also provides AT&T and the other carriers with significant economies and efficiencies in their operations. For example, the carriers are insulated from the insolvencies of ARINC's users. In the years 1970 through 1973, ARINC has written off \$360,415 in bad debts, most of which related to ARINC's domestic private line service. Because ARINC was the customer for the service, these costs were absorbed by ARINC and its other users rather than by the communications common carriers.

More difficult to quantify are other advantages to the carriers of having ARINC serve as the single contact for ordering and billing for service, such as the fact that ARINC now places its line haul orders with AT&T, the Associated Bell Companies, Western Union, and concurring independent telephone companies by delivering monthly a magnetic tape ready for processing by AT&T. Changes in the network are made by ARINC during the month, but AT&T and ARINC are greatly aided by the ability to compare their inventories automatically at least once a month.

AT&T is also relieved of the burden of preparing multiple bills for service. ARINC receives one bill each month from AT&T on magnetic tape for line haul, service terminals, and equipment charges. ARINC still receives about 3,000 bills from many Associated Bell Companies and independent telephone companies, but even here, the carriers are relieved of the obligation of sending separate statements to each of ARINC's users. ARINC is working with these and other carriers to simplify and expedite their billing procedures.

Thus, in both tangible and intangible ways, ARINC's customer status is of inestimable value to the air transport industry and is helpful to the common carriers. We believe that ARINC's role as industry customer provides significant economies in the use of the nation's communications resources.

To the extent that any institution or productive unit reduces the resource costs of producing valued goods and services, it contributes to the general economic welfare. As is shown in this statement, ARINC contributes to the efficient use of communications resources and, hence, to economic efficiency in precisely this way. At present prices and wages, the amount of aviation services produced by the airlines and other aviation activities costs less, i.e., uses fewer resources, than would be the case in the absence of ARINC. Conversely, any administrative action that would prevent ARINC from performing its present functions efficiently would tend to reduce the efficiency of economic activity of this sector of the economy, and, hence, general economic welfare.

III. RESPONSE TO SPECIFIC ITEMS OF
INQUIRY OF THE COMMISSION IN
PARAGRAPHS 29 THROUGH 31 OF ITS
NOTICE OF INQUIRY

In paragraph 31 of its Notice, the Commission requests that parties in this proceeding "specifically address" twelve enumerated questions. In addition to these designated "Items of Inquiry," the Commission indicates in paragraphs 29 and 30 that certain issues raised by Western Union in RM-2218 relating to value-added carriers are also "to be considered in this proceeding."

While the Commission has invited all parties to respond to all of these questions and issues, obviously some parties are more concerned with and have more information to offer on some issues than on others. Further, it will be helpful to user parties to have the benefit of data submitted by the established common carriers before venturing definitive recommendations on particular questions relating to fundamental changes in tariff policy.

Accordingly, while ARINC will address in these comments all of the issues raised by the Commission, ARINC will speak first and most fully to those items of inquiry concerning which ARINC believes it can contribute the most information. Other issues, though of importance to ARINC and the air transport industry, will be treated in later sections of this document. ARINC's comments on these latter issues will be more general in nature pending receipt of the comments of other parties, especially the common carriers.

A. Item of Inquiry No. 9, Paragraph 31:

"What is the justification for provisions of Section 2.2.1 of AT&T's Tariff F.C.C. No. 260 and Western Union's Tariff F.C.C. No. 254 which accord special tariff treatment to the airlines, corporate conglomerates, stock exchanges and their members, and others? Do such tariff provisions, constitute in whole or in part, unjust or unreasonable discrimination, or subject any person or class of persons to undue or unreasonable prejudice and disadvantage, or give any undue or unreasonable preference or advantage to any person or class of persons, within the meaning of Section 202(a) of the Communications Act?"

In response to this item, ARINC will discuss only the tariff provisions affecting it and the air transport industry.

The tariff provision which the Commission has in mind above in referring to "airlines" is undoubtedly ¶2.2.1(G) of AT&T's and Western Union's Private Line Tariffs, F.C.C. Nos. 260 and 254, respectively, which state that private line service may be used as follows:

"(G) For the transmission of communications to, from, within and between air carriers, where the customer is an aeronautical communication company licensed under the Aviation Services rules of the Commission to operate stations in the aeronautical mobile and fixed services."

This provision, in effect, recognizes ARINC as the "customer" of AT&T and Western Union for the transmission of communications "to, from, within and between air carriers." Other common carriers, such as the major international record carriers, specialized carriers, and domestic satellite

carriers, also recognize ARINC as their customer pursuant
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to more generalized tariff language.

As the Commission observes, there are other provisions in ¶2.2.1 of the AT&T and Western Union private line tariffs which recognize to some degree the customer status of other entities which are also serving the communications needs of the respective industries of which they
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are a part. The issue of "discrimination" arises, presumably, because of the failure or refusal by AT&T or Western Union to recognize the "customer" status of additional entities serving further industries, although no putative "customer entities" seeking to serve an industry are named by the Commission in its Notice.

²⁹ See p. 61, infra.

³⁰ For example:

1. The United States Government may order service for all Departments and Agencies of the federal government (see United States v. AT&T, 3 F.C.C.2d 939, 941 (1966); 40 U.S.C. §757 (1970)), which may be used by anyone for official business of the United States (AT&T ¶2.2.1(D); Western Union ¶2.2.1(E), and by state and local governments for their own business (AT&T ¶2.2.1(I));
2. Parent corporations may order service for all subsidiaries providing the parent owns more than 50% of the voting stock (AT&T ¶2.2.1(C); Western Union ¶2.2.1(D));
3. Electrical utilities may order private lines for use by other electrical utilities in conjunction with power pooling agreements (AT&T ¶2.2.1(F));
4. Stock and commodity exchanges may order service between their members and the members' posts on the floor of the exchange (AT&T ¶2.2.1(E); Western Union ¶2.2.1(F)); and
5. The U.S. Postal Service and composite data service vendors may order and use private lines in providing communications services to the public (AT&T ¶¶2.2.1(H), (J)).

At the outset, we call attention to the manner in which the Commission has structured its Item of Inquiry No. 9. The question of "discrimination" appears to arise, if at all, from the failure or refusal by carriers to serve certain entities, and not because of the carriers' affirmative provision of service to present customers under the tariff clauses in question.³¹ None of the tariff clauses cited was protested at the time it was filed and became effective. Rather than, in effect, asking whether AT&T's recognition of ARINC, or a stock exchange, or a power company, or a corporate parent, or the United States Government as its "customer" is "discriminatory," ARINC believes the question should be: Is the refusal of AT&T, or Western Union, to honor meritorious requests of other entities serving valid requirements unlawful under §201(a) of the Communications Act? The reasons for our view, at least with respect to ARINC,³² are detailed in succeeding paragraphs.

³¹For example, in the Docket 19746 complaint proceeding, briefly entertained by the Commission in 1973, the motor carrier industry complained of AT&T's refusal to grant it service, not of the existing provisions which related to industry entities now being served.

³²We also question the manner in which the Commission discusses the "single customer" issue by reference to "groups that do enjoy single customer status" and "user groups that are not specified as single customers" (Notice ¶25). It is much more than a matter of semantics to observe that a "single customer" is not a "group." It has been fashionable for some critics of these provisions -- especially some user "groups" which have no entity upon which they historically have relied for communications assistance -- to ignore the physical existence of the entities who actually serve as "customer" for an industry, and instead cast the issue in terms of "group" vs. "group." While it is indisputable (continued)

The significance of the preceding observation becomes apparent as we directly address the Commission's question as it relates to ARINC and the air transport industry: Is tariff clause ¶2.2.1(G) unlawfully discriminatory under §202(a) of the Act? Our answer is -- it cannot be.

In Part II of these comments supra, we have seen how ARINC was formed 45 years ago with Commission cognizance "to assure dependable and adequate communications" for the air transport industry which created it.

The services of ARINC and communication channels which it now provides have been shown to suffuse the entire industry. While the dictates of safety pervade the entire scene, the interrelated demands of efficiency and economy of air carrier operations are simultaneously served. As true today as then are the Commission's conclusions reached in 1937:

"After careful consideration of the whole record in the light of the Communications Act, and the rules and regulations adopted pursuant thereto, the Commission finds that a rapid, efficient, dependable, coordinated system of communications is necessary at all times for the safety of operation of airplanes on the airways." 4 F.C.C. at 163.

32 (continued)

that "customer" status for an industry entity can be expected to confer benefits on its industry members (a "group," if you will) that should not obscure the actual, corporeal existence of the "customer" itself. For example, if an industry is so fragmented in general, and so decentralized as to communications in particular, that it has not created, or cannot form or agree on an industry "customer," one can reasonably conclude that no need for that "customer" exists. This alone would be persuasive evidence that no unreasonable discrimination exists as to such "groups."

A request, therefore, by ARINC for communications channels from a common carrier regulated under Title II of the Communications Act to serve the air transport industry of which it is a part, is a reasonable request, and thus, the common carrier has a duty to provide the service requested. The fact that a carrier files a new tariff provision under which a service is provided cannot diminish its statutory duty to provide service in the first place.³³

The statutory duty of common carriers to provide service is clear and unmistakable. The first sentence in Title II of the Act asserts:

"It shall be the duty of every common carrier engaged in interstate or foreign communication by wire or radio to furnish such communication service upon reasonable request therefor" 47 U.S.C. §201(a) (1970) (emphasis added).

The foregoing statutory provision was specifically adapted from §1(4) of the Interstate Commerce Act,³⁴ which in turn, merely codified the well-established common law

³³ ARINC's original order for PLIN in 1967 sought service as a matter of right and requested no tariff modification from AT&T.

³⁴ See S.Rep. No. 781, 73d Cong., 2d Sess. 4 (1934). The Interstate Commerce Act provides in relevant part:

"It shall be the duty of every common carrier subject to this chapter to provide and furnish transportation upon reasonable request therefor" 49 U.S.C. §1(4) (1970).

rule governing a common carrier's duty to serve.³⁵ That is, "at common law a carrier was obligated to accept and transport all commodities which it had held itself out to transport for hire, whenever such commodities were tendered to or accepted by it"³⁶ Unless excused from their obligation by "acts of God" or a public enemy,³⁷ common carriers simply could not "refuse the duty incumbent by virtue of their public employment,"³⁸ for "[t]his rule is a politick establishment construed by the policy of law for the safety of all persons, the necessity of whose affairs oblige them to trust these sorts of persons that they may be safe in their ways of dealing."³⁹ Thus, shippers had

³⁵See, e.g., *American Trucking Ass'ns v. Acheson T., & S.F. Ry.*, 387 U.S. 397, 406 (1967); *Johnson v. Chicago, M. St. P. & P. Ry.*, 400 F.2d 968, 971 (9th Cir. 1968).

³⁶*Montgomery Ward & Co. v. Northern Pac. Term. Co.* 128 F. Supp. 475, 490 (D. Ore. 1953); *Hannibal & St. J. R.R. v. Swift*, 79 U.S. (12 Wall.) 262, 270 (1871) ("as a carrier of passengers it was bound . . . to take all persons who applied for passage, and their baggage and, as a carrier of goods, to take all other property offered for transportation . . .").

³⁷E.g., *Johnson v. Chicago, M. St. P. & P. Ry.*, 400 F.2d 968 (9th Cir. 1968).

³⁸*Montgomery Ward & Co. v. Northern Pac. Term. Co.*, 128 F. Supp. 475, 491 & n.10, citing *Lane v. Cotton*, 1 Ld. Raymond 646, 652, 91 Eng. Rep. 1332, 1335 (1701).

³⁹*Montgomery Ward & Co. v. Northern Pac. Term. Co.*, 128 F. Supp. 475, 491, citing *Lord Holt, Coggs v. Bernard*, 2 Ld. Raymond 909.

a right to insist upon service and a carrier's refusal to
furnish such service was actionable.⁴⁰

⁴¹
Various courts and the Interstate Commerce Com-
mission⁴² have consistently construed Section 1(4) of the
Interstate Commerce Act to require that "a common carrier
. . . must receive and carry such passengers or freight
as may be offered to it . . . provided that 'reasonable
request' is made therefor."⁴³ Moreover, this duty of com-
mon carriers to furnish such service has been held to run
to the public generally, even when the carrier is beset by
labor difficulties.⁴⁴

⁴⁰See, e.g., *N.J. Steam Nav. Co. v. Merchants' Bank*, 47 U.S. (6 How.) 344, 381 ("[a common carrier] is liable to an action in case of refusal").

⁴¹See, e.g., *Menasha Paper Co. v. Chicago & N. Ry. Co.*, 241 U.S. 55, 58 (1916) ("That act requires railroad companies to provide and furnish transportation to shippers upon reasonable request therefor, and to exact this duty of the railway company was the right of the shippers . . ."); *Chicago, R.I. & P. Ry. v. Hardwick Farmers Elev. Co.*, 226 U.S. 426, 434 (1912) (Congressional purpose to "specifically impose a duty upon a carrier in respect to the furnishing of cars for interstate traffic" is declared in Section 1 and other sections which provide remedies for the violation thereof).

⁴²See, e.g., *C.O.D. and Freight-Collect Shipments*, 343 I.C.C. 692, 760 (1974); *Northern Pac. Ry. Discontinuance of Trains*, 333 I.C.C. 15, 39 (1968) ("it is also a fundamental obligation of a rail carrier to provide service if the public convenience and necessity require it, and . . . this obligation is not automatically extinguished by an operating loss").

⁴³*Lucking v. Detroit & Cleveland Nav. Co.*, 273 F.577, 583 (E.D. Mich. 1921), aff'd, 284 F. 497 (6th Cir. 1922), aff'd 265 U.S. 346 (1924).

⁴⁴*Brotherhood of Ry. & S.S. Clerks v. Florida E.C. Ry.*, 384 U.S. 238, 245 (1966) ("The duty runs not to shippers alone but to the public . . . [The carrier] owes the public reasonable efforts to maintain the public service at all times, even when beset by labor-management controversies . . .").

In a like manner, the courts have enforced the common carrier's duty to serve embodied in the Communications Act, observing that "Section 201 requires a carrier to provide service upon reasonable request" ⁴⁵ Similarly, this Commission has held that the failure of common carriers to provide customers with certain communication services violated ⁴⁶ this basic obligation.

Here, then, ARINC's right under Section 201(a) to receive communication service from AT&T and Western Union is fundamental. The possibility that the common carriers may have unlawfully failed or refused to provide other customers with such service pursuant to reasonable requests therefor is a separate and distinct question -- indeed, the only appropriate question under Inquiry No. 9 of the Commission's Notice.

⁴⁵M.C.I. Communications Corp. v. American Tel. & Tel. Co., 369 F.Supp. 1004, 1022 (E.D. Pa. 1973), vacated and remanded on other grounds, 496 F.2d 214 (3d Cir. 1974).

⁴⁶See, e.g., Chastain v. AT&T, 43 F.C.C.2d 1079, 1084 (1973), petition for reconsideration denied, _____ F.C.C.2d _____ (FCC 74-120, released November 20, 1974) (AT&T's blanket denial of registry and connection of complainant's "Attache-Phones" in "IMTS" areas held to be "so broad that it failed to consider divergent factors in various IMTS areas, must be held to be an unreasonable policy in those areas without heavy congestion, and consequently, a violation of Section 201(a)"). See also Johnson v. Southwestern Bell, 18 F.C.C.2d 679 (1969) (formal complaint designated for hearing to determine whether telephone company violated §201(a) and/or §202(a) by refusing and terminating service to a minor); KOTA Cable T.V. Co. v. Minnesota Microwave, 26 F.C.C.2d 16 (1970) (complaint of CATV system against point-to-point microwave carrier designated for hearing on Section 201(a) issue).

Though obvious, it perhaps needs to be iterated at this point that the rates of the carriers are not at issue in this proceeding. As the Commission explained in denying MCI's request that issues relating to the Uniform System of Accounts be added to this proceeding:

"It has not been suggested that special rates for AT&T services should or may be appropriate when a resale is involved. As such the most appropriate forum for consideration of rates is in a traditional rate investigation, many of which are currently ongoing concerning rates for services which may be subject to resale; e.g. Docket 19919 (Bell's Hi/Lo rate structure for voice grade private line service), Docket 19989 (WATS tariff revisions), Docket 18128 (private line rate relationships and Tel-pak rates) and Docket 20099 (Facilities to other carriers)." 47

While under some tariff structures customer status for an industry entity may confer bulk price benefits -- under other tariff structures it would not. In this proceeding, we must assume that a carrier's rate structures are proper -- indeed protracted rate inquiries are now pending on these questions, e.g., Dockets 18128 and 19129. While the economies resulting from acquisition of communications facilities and services in bulk can be and are extremely important to industries such as the airline industry which depend so heavily on that commodity, it would turn this proceeding into a meaningless, disembodied quarrel if an

⁴⁷Memorandum Opinion and Order (Docket 20097) released October 3, 1974 (FCC 74-1030), ¶7.

attempt were made to equate "customer status" with special rate treatment. Bulk discounts and other volume rate criteria should be determined in relation to communications common carrier costs, market elasticity, and competitive forces, all of which factors are proper subjects for rate⁴⁸ hearings.

It is now, and consistently has been, ARINC's position that ARINC's right to serve as a customer of a common carrier regulated under Title II of the Communications Act is not dependent upon, nor does it derive from, any provision in AT&T or Western Union tariffs. ARINC's right to service is described, reflected, and confirmed in those tariff provisions, but it is not created by those provisions. This fact is confirmed by the recognition of ARINC as a customer by other domestic and international carriers, such as MCI, which have no tariff provision comparable to the AT&T⁴⁹ and Western Union ¶2.2.1(G). This is discussed at greater length in Section B, following.

If a §202(a) "discrimination" examination of the existing ¶2.2.1 clauses were the appropriate procedure,

⁴⁸It is appropriate here to recall that ARINC and its industry initiated and implemented the ARINC PLIN network based on ARINC's "customer" status at a time (1969) when no further "bulk discount" was involved, since the airline industry was then entitled to "share" AT&T's bulk rate Telpak services.

⁴⁹As of this writing, for example, ARINC is the customer of MCI for some 135 private line circuits with a like number on order. See also Appendix A for a description of ARINC's international leased channel facilities.

which we believe it is not, a careful comparison of complex factual situations underlying each tariff clause would be required, together with a comparison of those circumstances with those of other industries or entities which might or might not seek similar recognition.

The basic ingredients of the concept of "discrimination" have been well established under the much litigated provisions of the Interstate Commerce Act from
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which §202(a) was drawn. That is, it must be shown that a common carrier has (a) charged different rates or accorded different treatment to (b) two or more customers (c) in the rendering of a like and contemporaneous service (d) under substantially similar circumstances and condi-
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tions.

⁵⁰Section 202(a) of the Communications Act was derived from §§2 and 3(1) of the Interstate Commerce Act, 49 U.S.C. §§2, 3(1). S.Rep. No. 781, 73d Cong., 2d Sess. 4 (1934). Thus, the FCC has instructed that "the decisions of the I.C.C. under the predecessor to our statute are entitled to great weight." Private Line Cases, 34 F.C.C. 244, 317 (Initial Decision 1961).

⁵¹See, e.g., *Clover Splint Coal Co. v. Louisville & N.R.R.*, 197 I.C.C. 276, 277 (1933) ("Before a violation of section 2 of the act can be found, it must appear that the circumstances and conditions are substantially similar"); *Natural Gas Pipeline Co. v. New York C.R.R.*, 323 I.C.C. 75, 80 (1964) ("A further bar to a finding of discrimination is the absence of the rendering of a like kind of service as between two or more parties . . ."). See also *Canned Foodstuffs, Pacific Coast to the East*, 335 I.C.C. 612, 623 (1969); *Pickup and Delivery--Official Territory--L.C.L. & A.Q.*, 314 I.C.C. 313, 318 (1961); *Meridian Traffic Bureau v. A.G.S.R.R.*, 144 I.C.C. 131, 132 (1928).

But it is not even "discrimination" which is disfavored by the Communications Act, rather, as the courts have emphasized, only "unjust or unreasonable" discrimination.⁵² Thus, even a discrimination in rates may be justified by cost considerations,⁵³ by differences in the classification of "customer groups,"⁵⁴ or because of competitive market considerations.⁵⁵

⁵²See Associated Press v. FCC, 452 F.2d 1290, 1300 n.85 (D.C. Cir. 1971).

⁵³Hughes Sports Network, Inc. v. AT&T, 25 F.C.C.2d 550, 554 (Rev. Bd. 1970), citing Private Line Cases, 34 F.C.C. 217, 297 (1968) ("the cost of providing [common carrier communications] service constitutes the most reliable criterion available to determining just, reasonable, and non-discriminatory rates"); Telpak Sharing Provisions, 23 F.C.C.2d 639, 647-48 (Recommended Decision 1969) ("A discriminatory rate or preference may be justified by a persuasive showing that the discrimination is related to differentials in the cost of providing service").

⁵⁴Under §201(b) of the Act, the Commission may recognize various "classifications" of communications. In this connection, the United States Court of Appeals for the D. C. Circuit has observed that "[t]he Commission, as we have said, is statutorily empowered to classify the press separately from other customer groups, and to establish different charges for press and nonpress communications, subject to the requirement that the rates thus prescribed be just and reasonable, and the further requirement that undue or unreasonable discriminations and preferences be avoided. Standing alone, neither the fact of separate classification nor the fact of a difference in tariff charges exerts any real tendency to demonstrate a collision with the statutory prohibitions" (emphasis added). Associated Press v. FCC, 452 F.2d 1290, 1301 (D.C. Cir. 1971).

⁵⁵Telpak, 37 F.C.C. 1111 (1964), aff'd sub nom. American Trucking Ass'ns v. FCC, 377 F.2d 121 (D.C. Cir. 1966), cert. denied, 386 U.S. 943; Eastern Central Motor Carriers' Ass'n v. United States, 321 U.S. 194 (1944); ICC v. Alabama Midland Ry., 168 U.S. 144 (1897).

As to the last issue, competitive market conditions alone call for ARINC's recognition as customer by the carriers and would justify any discrimination which might be found to exist. The record in Docket 18128 and ARINC's current experience as the licensee of private microwave systems for the air transport industry establish that an ARINC nationwide microwave system is a clear alternative should the carriers not recognize ARINC as the customer. The appropriateness of ARINC's customer status to keep ARINC and the air transport industry from abandoning carrier-provided private line service was recognized by the Commission in the Telpak Sharing Case. See 23 F.C.C.2d at 610-11 (quoted at p. 14, supra).

Thus, all of the aforementioned factors must be evaluated if one considers the various "customer" clauses in the context of §202(a). Thus, a §202(a) investigation into the subject tariff clauses of AT&T and Western Union to see first of all if there was in fact "discrimination" and, second, to determine whether such discrimination was "unjust or unreasonable" under §202(a) would require comparing the past, present, and future needs of a variety of industries and entities in a changing economic and technological environment. But, as pointed out above, such factual and legal comparisons under §202(a) are not necessary or appropriate here (at least in so far as ¶2.2.1(G) is concerned). What is appropriate is to

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determine under §201(a) standards whether there has been any unjustified refusal of service to any organization.

In short, the questioned "¶2.2.1" tariff clauses (certainly ¶2.2.1(G) relating to ARINC and the air transport industry) are attempts by the carriers to respond under §201(a) to "reasonable requests" for service, and, thus, are valid. Accordingly, there is no purpose served in attempting the exhaustive exercise of comparing the communications needs of the airline industry with, say, retail candy stores to see if the factual criteria for §202(a) "discrimination" have been shown.

If a §202(a) examination of existing clauses is not a useful endeavor, what should the focus of the Commission's inquiry be? We believe that information supplied to the Commission in this proceeding, primarily in response to Items of Inquiry 9 and 10, will enable it to determine, first, whether any action on its part is required at all. And, second, if some Commission action or guidance seems desirable, the data submitted herein may enable the Commission to establish guidelines, or to recommend general tariff provisions which will help carriers to avoid unlawful refusals of service. That is, attention should be directed toward ascertaining whether improper refusals of service exist or are likely to occur and to provide guidance to the carriers in that regard. The Commission, for example, has specifically indicated that it expects to receive

evidence that is "typical" of industries which do, and those which do not, have entities who have been accorded "single customer status." (Notice ¶25). The Commission thus should be able to ascertain whether there are any industry entities seeking service who have been denied service improperly under §201(a).

Considerations which may assist the Commission in this analysis are discussed next below in response to Commission's Item of Inquiry No. 10.

B. Item of Inquiry No. 10, Paragraph 31:

"Should the provisions under consideration in question 9 be found to involve unlawful discriminations, what action should the Commission take to remove such unlawfulness? Fully justify any recommended tariff changes and discuss their consistency with any recommended changes with regard to resale and shared use of private line facilities in general."

As indicated in Part A above, we question whether the provisions in ¶2.2.1 of the AT&T and Western Union private line tariffs (and surely ¶2.2.1(G)) which recognize certain "customer entities" for the provision of service could be found unlawfully "discriminatory" under §202(a) of the Communications Act. If there is any unlawfulness in this connection, it would be in the practice of the carriers' failing or refusing to provide service to responsible entities which have made reasonable requests for service.

We are not, therefore, in the posture of the Telpak Sharing Case where the Common Carrier Bureau's

Recommended Decision found:

"It would appear that the elimination of the sharing privileges now permitted by the Telpak regulations would be a step backward in that it would inhibit, rather than promote, the efficient and economic use of available communications services by the public." 23 F.C.C.2d at 655. (Emphasis added).

Despite the Bureau's view expressed above, the negative "backward step," in its view, of eliminating the sharing regulations was ultimately taken because the Commission was unable on the record it had to require the affirmative action it would like to have taken (in that case, "unlimited sharing").⁵⁶

There is no procedural or other justification here for taking a "backward step" which would "inhibit, rather than promote, the efficient and economic use of available communications services by the public." Id.

The nub of Item of Inquiry No. 10, in ARINC's view, is, what guidelines or prototype tariff provisions might be proffered as guidance to the carriers and to the Commission in determining the nature and scope of recognition which should be accorded industry "customers" so as to avoid violations of §201(a) for unjustified "refusals to serve."

Without in any way conceding at this point that present circumstances require further Commission action, and simply in response to the Commission's hypothetical

⁵⁶See American Tel. & Tel. Co. v. FCC, 449 F.2d 439 (2d Cir. 1971).

inquiry, ARINC discusses first below the "guideline" approach whereby the Commission could provide guidance to common carriers in determining which entities can provide and coordinate communications services as an "industry customer" and from which a request for service could be expected to be "reasonable" within the meaning of §201(a). Secondly, in Section 2 below there are discussed tariff clauses which the Commission might wish to consider in this regard. And, finally, as requested in Item of Inquiry No. 10, we discuss in Section 3 the "consistency" of such "customer" provisions with the issue of "resale and shared use."

1. Possible use of customer "guidelines."

There exists today in ¶2.2.1 of the AT&T and Western Union private line tariffs a number of clauses which respond to the needs of specific industries and governmental authorities.⁵⁷ Many of these have been inserted, no doubt, after various degrees of informal consultation with the carriers and Commission staff.

We believe this ad hoc approach could continue. If the record herein suggests that it would prove useful to the carriers and to users, however, the Commission could also enunciate "guidelines" regarding "customer" status.

⁵⁷See clauses cited at n.30 supra.

Because we do not have before us at this time the comments of the other parties to this proceeding, any suggestion of detailed guidelines here would be premature. We think, however, that the standards for "customer status" properly could follow past precedent.

Thus, we would expect at the outset that the common communications needs of the industry in question were such that a service organization had indeed been created by the industry. The point being that absence of a service organization suggests the absence of an industry need.

Beyond mere existence, the service organization would be expected to have substantial responsibilities imposed upon it by its industry to assist in fulfilling the industry's purposes and responsibilities. Such industry responsibilities would include, for example, those dictated by operational requirements, by regulatory agencies, or by statute. That is, the industry entity could show that it has the traditional "interest" in seeing that industry messages and communications are indeed handled effectively. Industries which rely on such customers could be expected to have substantial member "interrelationship" as to communications, which may be manifested by: direct intercommunication between and among members of the industry; need for and compliance with common standards and procedures; substantial industry communications to various "common points"; etc.

If the industry customer were to provide its communications services on a not-for-profit basis, this would tend to confirm the bona fide industry need for commonly provided services, as distinguished from the emergence of a venture seeking to generate profits for its separate account such as would characterize a common carrier for hire. The industry's common need for communications, and for a customer entity, would also be confirmed by the entity's capability of, or experience in, providing its own communications facilities to supplement or supplant those of the common carriers in serving the industry.

It is possible that from the above considerations, the Commission could fashion useful "guidelines" for customer status.

In lieu of, or in addition to, such guidelines, however, the Commission might wish to consider more generalized tariff language which could achieve the same goal of assuring compliance with §201(a) by the nation's communications common carriers. This is treated below.

2. Possible tariff provisions enabling "customer entities" to function on behalf of their respective industries.

Separate from, or perhaps concomitant with, the "guideline" approach, the Commission might wish to recommend or prescribe a general tariff clause to assure accommodation of bona fide industry "customers."

An example of tariff language which could be adapted to this purpose is found in MCT's Tariff F.C.C. No. 1, to wit:

"6. USE OF SERVICE

".01 Private Use Service may be used for one or more of the following:

".011 for the transmission of communications by the customer.

".012 for the transmission of communications to or from an authorized user or a joint user. An authorized user is a person, firm or corporation who is authorized by the customer to be connected to the service of the customer or a person, firm or corporation who is authorized by a joint user to be connected to the service of the joint user. An authorized user must be specifically named in the application for service and a station of the private line service must be located on his premises. Only the following may be authorized users: persons, firms, or corporations who are to receive or send communications from or to the customer only and relating solely to the customer's business; corporations over which the customer exercises control through the ownership of more than 50% of the voting stock; persons, firms or corporations in the same line of business as the customer. Banks, security dealers and exchange brokers dealing in stocks, bonds or commodities shall be considered to be in the same line of business. (Emphasis added).

* * *

".03 Customized Business Communications Service shall not be used:

".031 for any unlawful purpose.

".032 for any purpose for which any payment or other compensation is received by

the customer, except when the customer is a duly authorized and regulated common carrier. This provision does not prohibit an arrangement between the customer, authorized user or joint user to share the cost of the service. (Emphasis added).

The pertinent definitions are as follows:

"1. Authorized User

"A person, firm, corporation or other entity authorized by the customer to receive or send communications.

* * *

"7. Customer

"The person, firm, corporation or other entity, which orders service and is responsible for the payment of charges and compliance with MCI tariff regulations. Except for duly authorized and regulated common carriers, no one may be a customer for Private Use Service who does not have a communications requirement of his own. Unless otherwise indicated herein, the term 'customer,' when used in this tariff, also means authorized user or joint user." (Emphasis added).

The net effect of these tariff provisions is that if the "industry customer," and its "authorized users" in "the same line of business" wish to transmit communications over circuits which have been ordered by the customer, they may do so. Thus, for those industries having this kind of need, a means for satisfying it pursuant to the carrier's obligation under §201(a) of the Act has been provided by the carrier.

A similar, though not identical, tariff structure is found in Western Union Tariff F.C.C. No. 254. See ¶¶2.2.1(C), 2.5 ("authorized user," "customer").

To accomplish the desired purpose, it must be clear in any tariff scheme that an industry "customer" such as ARINC which has reposed in it responsibilities for enhancing the safety, efficiency, and economy of the operations of its industry, does have an "interest" in the communications of its industry members so that their respective communications requirements become, as to the customer, a "requirement of his own." (See MCI definition of "customer," supra). That such direct "interest" does exist was indicated by the Commission in 1937 when it said, with respect to ARINC's right to order circuits from AT&T as customer:

"It must be concluded that no interest in the content of the messages handled is necessary, but that it is sufficient if the fact that the message is sent aids the lessee [customer] in carrying out purposes of its own distinct from those of a communication carrier for hire." ARINC v. AT&T, 4 F.C.C. 155, 164 (1937).

Thus, if necessary, the Commission could clarify the "customer" issue, either by general guidelines supplemented by ad hoc tariff treatment of industry entities, or by general tariff clauses prescribed by the Commission.

We wish to emphasize again, however, that the above suggestions are simply in response to the spirit of the Commission's hypothetical question in Item No. 10 and do not represent an ARINC conclusion as to the need for any remedial action by the Commission.

The suggestions we have just discussed are also consistent with our overall view regarding sharing and resale of communications, discussed next below.

3. Relation of suggestions regarding "single customer" questions to "sharing and resale."

As treated in more detail in Sections III(C)-(E) below, ARINC favors a liberal policy toward joint use of communications facilities. Thus, even for those industries or "groups" whose operational structure or needs are not such as to lead to the formation of a "customer entity," the possibility of finding some opportunities for "joint use" of discrete facilities should also exist.

Our views regarding the "regulatory status" of industry "customers" and of "sharing arrangements" are similar. Where an industry "customer" provides communications on a not-for-profit basis and for the benefit of its own industry, it is our view that no regulation or reporting whatsoever is required or desirable. This is also our view with respect to "sharing arrangements" in general, all as discussed in greater length in Section III(E) below.

C. Items of Inquiry Nos. 1-4, Paragraph 31, Concerning Restrictions on Resale of Common Carrier Services.

In Items of Inquiry Nos. 1-4 of Paragraph 31, the Commission seeks information on the justification for present tariff restrictions on third party traffic and resale of common carrier services, whether such restrictions should be removed in whole or in part, and what the effect of such removal would be on the industry and the public.

On the question of whether restrictions on resale, in general, should be relaxed or removed, ARINC will defer at this juncture of the case until the initial comments of the common carriers have been received. In these initial comments, ARINC will principally address the present applicability of these provisions to its own service requirements pending an opportunity to review the comments of the common carriers herein.

Initially, ARINC notes that its operations do not involve resale or the carriage of third party traffic. As the Commission specifically found in 1937,

"Complainant [ARINC] does not propose a service to 'others' or a 'resale' of a public utility service such as may reasonably be regarded to be within the prohibition of defendant's [AT&T's] tariff rules."
ARINC v. AT&T, 4 F.C.C. 155, 166 (1937).

ARINC continues to operate, as it did in 1937, on a not-for-profit basis, and, therefore, does not "resell" communications services. Likewise, as shown earlier herein, ARINC has an interest of its own in the communications of the airline industry, and is not merely disinterestedly handling communications "for others."

Indeed, although AT&T's tariff clause ¶2.2.3 excepts from its "resale" prohibitions service used in accordance with ¶2.2.1(G) which explicitly recognizes ARINC's customer status, it is clear that the restrictions on resale and third party traffic would not apply to ARINC's operations even

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in the absence of ¶2.2.1(G). In recognition of this fact ARINC ordered its nationwide private line network from AT&T in 1967, almost two years before AT&T modified ¶2.2.3 to reflect the insertion of ¶2.2.1(G) into its tariff. As observed in previous discussions herein, any tariff clause which might have been an obstacle to honoring an order from ARINC for service would, in ARINC's view, be violative of §201(a) of the Communications Act.⁵⁹

While postponing any detailed discussion of the "re-sale" tariff clauses at this time, ARINC does believe that one clause in AT&T and Western Union private line tariffs deserves attention; that is the general limitation on use of private line service to the transmission of communications "to or from the customer" (¶2.2.1(A)).

It would seem that the restrictions against resale and third party traffic in ¶2.2.3 and the limitation in the

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AT&T Tariff F.C.C. No. 260 ¶2.2.3 provides as follows:

"Private line service shall not be used for any purpose for which a payment or other compensation shall be received by either the customer or any authorized or joint user, or in the collection, transmission, or delivery of any communications for others, except as provided in 2.2.1(F), 2.2.1(G), 2.2.1(H) and 2.2.1(J) preceding. This provision does not prohibit an arrangement between the customer and the authorized or joint users to share the cost of the private line service, nor does it prohibit the use of Type 2006, 5206 or 8206 channels by a communications common carrier in the rendition of a public telegram message business." See Western Union Tariff F.C.C. No. 254 ¶2.2.3.

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See p. 56, supra.

definition of "customer" in ¶2.5 to one who has a communications requirement of his own sufficiently delineate any justifiable limitations.

Thus, if the Commission should decide that it is preferable for the carriers to serve recognized industry communications entities as customers pursuant to general tariff provisions, rather than under particular clauses, ARINC urges the Commission either: to require the carriers to excise from their tariffs any limitation that communications be "to or from the customer"; or to assure that such clause has a sufficiently broad interpretation so as to include points at which the industry customer has an "interest" in seeing that communications service is provided, even though such point may not be on the customer's premises.

D. Items of Inquiry Nos. 5-8, Paragraph 31, Concerning Sharing of Common Carrier Facilities and Services.

In Items of Inquiry Nos. 5-8 of Paragraph 31, the Commission has undertaken to determine: (1) the justification for limits on the sharing, as distinguished from resale, of common carrier services and facilities; (2) whether such restrictions should be removed in whole or in part; and (3) the public need for sharing, particularly if restrictions on resale are eliminated.

In referring to "sharing" it appears that the Commission is referring to what AT&T and Western Union generally

denominate "joint use of arrangements."⁶⁰ In general, joint use arrangements permit entities to share the use of a common carrier service or facility, as well as sharing the cost thereof.

Again, as in the case of resale, ARINC does not have a substantial direct interest in joint use arrangements. However, ARINC is aware of the fact that other users can achieve significant efficiencies through joint use arrangements. For example, since a voice-grade private line circuit may be subdivided into numerous telegraph circuits by customer-owned multiplexing equipment,⁶¹ a number of businesses, each requiring only a fraction of the telegraph channel capacity of a voice channel, can enter into a joint use arrangement to share a single voice grade channel.

ARINC believes that the present joint use arrangements satisfy legitimate public needs and contribute to the efficient use of communications resources.

In addressing the Commission's specific Inquiry Item No. 5 as to the justification for limiting the sharing of private line services to, generally, voice grade and lesser bandwidth services, ARINC assumes that, in the first instance,

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See AT&T Tariff F.C.C. No. 260 ¶3.1.5; Western Union Tariff F.C.C. No. 254 ¶3.1.5; AT&T's proposed Dataphone Digital Service Tariff F.C.C. No. 267 ¶2.2.5(B) provides for "shared use," comparable to, but less restricted than, "joint use" in the private line tariff.

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See, e.g., AT&T Tariff F.C.C. No. 260 ¶¶2.2.6, 2.6.2(C).

the carriers themselves will provide the Commission with information on this subject. We question, however, whether there is justification, consistent with the goals of permitting the widest degree of flexibility for customers in the use of their service, for limiting sharing of broader bandwidth services provided by discrete facilities.

E. Items of Inquiry Nos. 11-12, Paragraph 31, Concerning the Regulation of Sharing Agreements and Entities Reselling Communications Services and Facilities.

In Item 11 the Commission asks whether it should regulate the sharing agreements made between customers and joint users and, if so, to what extent and in what manner. In Item 12, the manner in which "resale entities" should be regulated is the issue.

The Commission has, we believe, been wise in its past refusal to impose regulatory constraints and compliance on every activity that its statutory jurisdiction arguably could cover. While a discussion of legal precedents in this regard may be appropriate in later submittals herein, it is a summation of ARINC's view to say that as to the using, sharing, brokering, reselling, and "adding value to" common carrier services, this Commission should use its discretion and ingenuity to avoid regulation except as: (a) required by the present Communications Act, and (b) demanded by clear evidence of abuses requiring the intervention of the Commission's regulatory hand.

Specifically, ARINC believes that there is no basis in the Commission's well established traditions, in the Communications Act, nor in facts now before this Commission for the regulation of not-for-profit cost-sharing arrangements between customers, between joint users, or between customers and authorized users as currently permitted by AT&T's and Western Union's private line tariffs. Nor, in ARINC's view, is any new legislation needed or desirable on this subject.

With regard to "resale entities" which seek a profit on their services, a more difficult legal and policy question arises. ARINC wishes to review the initial comments of the common carriers and putative "resale entities" before responding to the full scope of this question. The fears of the common carriers, the desires of users, and the goals of the "resale entities" need to be considered in responding to this question.

F. Items of Inquiry Nos. 1-5, Paragraphs 29-30, Concerning Value-Added Carriers.

In addition to the Items of Inquiry specified in Paragraph 31, the Commission notes five issues suggested by Western Union relating to the public interest in the development of value-added carriers and the impact of such carriers on Western Union.

While ARINC will be interested in reviewing the comments of the "established" carriers on this issue, ARINC's

present view is that value-added carriers may provide useful innovations to the using public and should be given encouragement by the Commission. We suspect, further, that the activities of value-added carriers will have a synergistic effect favorable to increased use by the public of the services of the "established" carriers. Therefore, consistent with our view throughout, the regulatory strictures applied to value-added carriers, initially at least, should be the minimum permissible under the Communications Act.

Respectfully submitted,
AERONAUTICAL RADIO, INC.

December 11, 1974



APPENDIX A

ARINC International Point-to-Point Services

International Terminals	U.S. Gateways	Common Carrier or Other Agency(ies) Providing Facilities	Type of Service	Channels in service
Agana, Guam	San Francisco	RCA/WUI ^{1/}	Telegraph grade	3
Anchorage, Alaska	Sweet Grass, Montana	RCA Alascom/ ARINC Multiplex ^{2/}	Telegraph grade Data (2400 bps)	10 1
Bahamas (various)	Miami	ARINC HF (SSB)	Voice	1
Bogota, Columbia	New York	ITT	Telegraph grade	1
Havana, Cuba	Miami	AT&T	Telegraph grade	1
Havana, Cuba	Miami	ARINC HF (CW)	Telegraph (Morse)	1
Honolulu, Hawaii	San Francisco	WUI	Telegraph grade Data (2400 bps)	12 5
Kingston, Jamaica	Miami	ITT	Telegraph grade	1
Mexico City, Mexico	Laredo	Telefonos de Mexico	Telegraph grade	2
Pago Pago, American Samoa, and Apia, Western Samoa	San Francisco	WUI/US Gov't/Am. Samoa/ Western Samoa ^{3/}	Telegraph grade	1
Port au Prince, Haiti	Miami	ARINC HF (SSB)	Voice	1
San Juan, Puerto Rico	Miami	ITT	Telegraph grade	13
Tegucigalpa Honduras and on ^{4/}	Miami	TRT	Telegraph grade	1

^{1/} Service between San Francisco and Honolulu provided via a WUI multiplex offering. At Honolulu the individual multiplexed circuits are interconnected to an RCA multiplex offering to Guam.

^{2/} ARINC leases a 7200 bps data circuit from RCA Alascom from which ARINC derives the circuits shown.

^{3/} Facilities from San Francisco to Honolulu provided a WUI multiplex offering, from Honolulu to Pago Pago via U.S. Government (FAA) H.F. facilities and from Pago Pago to Apia via VHF circuit jointly provided by governments of American Samoa and Western Samoa.

^{4/} Circuit also serves various other Central American points through interconnection at Tegucigalpa with facilities of ARINC's correspondent, Corporation Centroamericana de Servicios de Navegacion Area (COCESNA).

STATEMENT OF AIR MIDWEST, INC.

Aeronautical Radio; Inc. (ARINC), has requested Air Midwest, Inc., to describe for the Commission the importance of ARINC's communications system to the operations of Air Midwest. The following statement is submitted in support of ARINC's direct case in this roceeding.

Air Midwest is a commuter air carrier with its headquarters in Wichita, Kansas. Air Midwest currently provides scheduled passenger and cargo service to Kansas City, Missouri; Johnson County Airport, Salina, Hays, Great Bend, Hutchinson, Dodge City, Garden City, and Liberal, Kansas; Denver, Colorado. In addition, Air Midwest has a nightly mail flight to Pueblo, Colorado. Air

Midwest currently operates this schedule using two Beech 99's (15 passenger aircraft) and three Cessna 402's (7 passenger aircraft).

Over Air Midwest's specialized route structure, it is now providing a significant service to the public with substantial acceptance of that service. The following statistics will compare the first half of 1974 with the first half of 1973:

	<u>6 months</u> <u>6-30-74</u>	<u>6 months</u> <u>6-30-73</u>	<u>%</u> <u>Change</u>
Passengers boarded	21,680	16,866	+28.5%
Miles flown	848,046	743,016	+14.1%
Total seat miles	9,934,096	8,695,197	+14.8%
Revenue passenger miles	4,941,157	3,980,851	+24.1%

Air Midwest in April 1974 became the first commuter air carrier to receive a subsidy flow-through on an experimental basis from the Civil Aeronautics Board. Over the past decade, commuter air carriers have been replacing local service and trunk carriers' service to smaller communities. As of February 1974, commuter airlines had replaced 10 certificated airlines at 53 points pursuant to

agreements filed with the CAB. In many other cases, the commuters have replaced the certificated airlines without any formal agreement; the certificated air carrier simply withdraws or limits service and a commuter enters the market to provide service to the public.

In the case of Air Midwest, we replaced Frontier Airlines, a subsidized certificated local service carrier, in its service to Dodge City, Great Bend, and Hutchinson, Kansas. Pursuant to an experiment made in conjunction with the CAB and Frontier, Air Midwest will receive some of the subsidy funds which had been allocated for Frontier service to the three cities. Frontier's subsidy requirement for this service was about \$406,000, but Air Midwest will receive less than \$132,000 for the year. Air Midwest is encouraged by this development which will not only improve the service to these communities, but will also decrease the subsidy cost to the American taxpayers.

Communications are vital to a commuter air carrier such as Air Midwest. Air Midwest currently uses ARINC air-ground facilities at Kansas City, Dodge City, Great Bend, and Wichita, Kansas. At Kansas City, Air Midwest has contracted with Frontier Airlines for ground handling of services and communicates principally with Frontier Airlines.

Air Midwest currently relies upon a single full period voice party line communications system for most of

its backbone communications. This private line channel obtained from ARINC connects all of Air Midwest's cities, including the Frontier Airline office in Kansas City. We use a loudspeaker in all of the offices and messages are called out and acknowledged over the single circuit. For example, when a plane leaves Wichita heading for Dodge City, our Wichita office will merely call over the party line circuit "Dodge City, flight 945 departing 7:15 a.m. Wichita." In this manner and in conjunction with the air-ground radio service, Air Midwest is provided with its flight following and dispatching communications. This backbone facility is used to coordinate the entire operations of Air Midwest and to handle reservations. All Air Midwest offices receive local reservations requests by telephone and in person in each of the cities it serves. These reservations are then called over the ARINC backbone circuit back to Wichita, at which point they are entered into Air Midwest's reservations system and confirmed to the customer.

Air Midwest has a computerized passenger name record (PNR) reservations system which is currently provided under contract with Braniff Airlines. We now have cathode ray terminal devices at our Wichita headquarters only with which we can communicate with the computer system in Dallas. The line connecting Wichita to Dallas is a full-period medium speed data circuit provided by ARINC and carries communications

to and from a number of other air carriers in addition to Air Midwest. We are now considering the possibility of adding additional computer terminals at Denver to relieve some of the workload at Wichita and to relieve some of the reservations traffic now being handled on the backbone party line voice circuit.

In addition, Air Midwest has obtained a foreign exchange line from ARINC between Kansas City and Wichita. This line is necessary because the Air Midwest "office" in Kansas City is staffed by Frontier and Frontier cannot adequately handle all of Air Midwest's reservations calls as well as our operational communications.

Air Midwest also relies heavily upon ARINC for interline electronic switching service (ESS) by which Air Midwest can communicate to and receive messages from air carriers throughout the nation. This is an especially important service to Air Midwest because approximately 98% of our business is interline. Indeed, we have now concluded joint fare arrangements with Braniff and Frontier Airlines and have interline agreements with these and a number of other air carriers. Air Midwest experienced a significant increase in reservations and passengers boarded upon connection to ARINC's ESS service in 1970.

The communications services, air-ground, point-to-point, and ESS, which Air Midwest obtains from ARINC, are vital both to the operational efficiency of Air Midwest as a part of the nation's air transport system and to the safety aspects of the operations. More efficient and cost-effective operations generally mean safer operation. In many areas, Air Midwest is able to set its standards above the minimum safety criteria set by the Federal Aviation Administration and thus can assure the public of a greater margin of safety than even the high standards set by the Federal Aviation Administration. Air Midwest uses its backbone for flight dispatch and flight following functions, which keep track of the airplanes and can be used to communicate to advance posts regarding weather, changes of itinerary, and the like. Some ARINC facilities are used for reservations, but these reservation data are essential for Air Midwest's weight calculations. In the case of Air Midwest, these calculations are extremely important because the Beech 99's are load limited, especially on the long haul from Garden City to Denver.

Therefore, Air Midwest supports ARINC's current customer status for private line services. ARINC provides Air Midwest and the air transport industry with important communications services in the optimization and integration of facilities into a cohesive whole. Through ARINC, the

economic and operational benefits of these integrated communications services can be made available to small commuter airlines as well as the large trunk and regional airlines. As such, the communications common carriers should continue to recognize ARINC as their customer for the air transport industry.

Respectfully submitted,
AIR MIDWEST, INC.

December 11, 1974

STATEMENT OF AIR WISCONSIN, INC.

At the request of Aeronautical Radio, Inc. (ARINC), the following statement is submitted on behalf of Air Wisconsin, Inc., to describe the importance of communications to our commuter air carrier operations.

Air Wisconsin is a scheduled air carrier operating under the exemption authority conferred by Part 298 of the Federal Aviation Regulations. Air Wisconsin began scheduled operations in 1965 prompted by the decision by North Central Airlines to limit and ultimately to cease service to Appleton, Wisconsin, the corporate headquarters of Air Wisconsin. Air Wisconsin now flies to 10 airports serving 18 communities in Minnesota, Wisconsin, Illinois, Indiana, and Michigan. A copy of a current route map is attached.

Air Wisconsin is, and intends to remain, an integral and permanent part of the nation's air transport industry.

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The carrier now has interline passenger, baggage, and air freight agreements with all major domestic and international carriers, and maintains joint fares between all Air Wisconsin markets and the major markets of American, Braniff, Continental, Delta, Eastern, Northwest, Trans World and United.

The importance to the public of Air Wisconsin and other commuter air carriers in smaller markets such as Appleton is demonstrated by our experience with the Appleton-to-Chicago market. In the last year of service over this route by North Central (1965), North Central provided Appleton with two flights a day and carried a total of only 6,145 passengers. During 1966 (our first full year), Air Wisconsin averaged six flights a day and increased the number of passengers carried to 11,240. By 1973, public reliance upon Air Wisconsin had grown substantially, and Air Wisconsin averaged 11 flights a day and carried a total of 26,014 passengers over this route.

Air Wisconsin's philosophy of providing frequent convenient scheduled air service to the public continues to show good results and growth. During the first six months of 1974, Air Wisconsin carried 98,513 passengers for 13,915,769 passenger seat miles over its entire system. These figures represent increases of 28% and 27% respectively over the same period for 1973. In addition, Air Wisconsin

carried 1,607 tons of freight. To provide this service, Air Wisconsin operates seven Swearingen Metro turbo-prop aircraft, each seating up to 19 passengers, and retains a Beech 99 as a backup.

To coordinate this system, Air Wisconsin obtains from ARINC six circuits into headquarters at Appleton, two each from Lafayette, Elkhart, and Battle Creek. In addition, Air Wisconsin obtains four full period voice circuits between the Chicago O'Hare Centrex system and Appleton. All of these private line circuits, with the exception of one of the full period voice circuits to Chicago, are used to handle reservations traffic. However, all of these circuits are available, and are in fact used for communications directly relating to the operation of the aircraft.

For example, Air Wisconsin and ARINC have the ability to set up a direct phone patch over these circuits so that two-way voice communications can be obtained between the aircraft in the air and headquarters premise in Appleton over the nearest ARINC radio station. This type of operation is standard procedure during non-routine and emergency aircraft situations and permits direct communications between operations or maintenance personnel at the Appleton headquarters and Air Wisconsin aircraft in the air anywhere over the Air Wisconsin system.

Air Wisconsin also uses these private line circuits in conjunction with its air-ground service for flight dispatch and flight following functions, aircraft diversions, weather, and for general communications relating to the administration of the air carrier operation.

Air Wisconsin also obtains private line data services from ARINC. One circuit is a teletype grade extension for weather wire service to Appleton and the other involves voice grade data service between various points on the Air Wisconsin route structure in Dallas, Texas, for connection to Air Wisconsin's reservation computer service.

An indication of the interrelationship and interdependence of the airline industry in relation to communications is exemplified by the fact that Air Wisconsin obtains reservations and by contract from information storing and processing service by contract with Braniff. Through the use of the Braniff computer, Air Wisconsin can input, store, and keep track of online and interline reservations and can also store and make available throughout the Air Wisconsin system dispatch-related communications. In addition, the reservations computer and the ARINC communications back-bone is used by Air Wisconsin to store weather information for retrieval at any time. Finally, Air Wisconsin uses the reservations computer in Dallas as its delivery point for interline messages over ARINC's ESS.

ARINC's ESS, together with its other communications facilities, are made available to all air carriers and greatly assist third-level carriers, such as Air Wisconsin in becoming integrated into the nation's air transport system. The convenience to the public of being able to make interline reservations for connecting flights cannot be underestimated, and has been an important factor in the growth of the commuter air carriers. We currently estimate at Air Wisconsin that 85% of our business is interline. Moreover, the private line circuitry connecting ARINC's ESS with our reservations system must handle communications addressed to and initiated by a wide variety of air carriers.

Much of the communications actually transmitted over ARINC's private line facilities relate to the public convenience in reservations. Reservations data, however, also relate directly to flight operations and flight safety. For example, for flight planning, and particularly weight and fuel planning, Air Wisconsin makes its preliminary calculations as to fuel and cargo loads based on the data listed in the reservations computer. These calculations are essential for the safe conduct of the flight, and today fuel planning, and its relations to load data, is economic as well. The cost of fuel at O'Hare is substantially greater (approximately double) the price of fuel at other airports served by Air Wisconsin.

Moreover, the overall safety and efficiency of Air Wisconsin's operation are greatly enhanced by the availability of the ARINC communications facilities. Even the ARINC reservations circuits are available, and are used, during emergencies. Rapid and efficient communications are essential to the operation of a commuter air carrier because the flight segments are usually short. For example, Air Wisconsin's Metros fly at approximately 300 mph, and the flight between Appleton and Wausau takes only 17 minutes.

For all commuter airlines, the Commuter Airline Association estimates that the average passenger flight is only about 100 miles. By way of contrast, the local service airlines average 299 miles and the trunk airlines average 797 miles.

Communications are also required by Air Wisconsin to maintain control over its flights. For example, Air Wisconsin encounters frequent air traffic control delays at O'Hare Airport. Therefore, before dispatching a flight to Chicago, the current status is ascertained over the full-period service circuit between Appleton and O'Hare. Should the flight encounter delays while enroute, the ARINC private line service and the ARINC air-ground service are essential to arrange for a diversion of the Air Wisconsin aircraft from O'Hare to Palwaukee Airport and to arrange

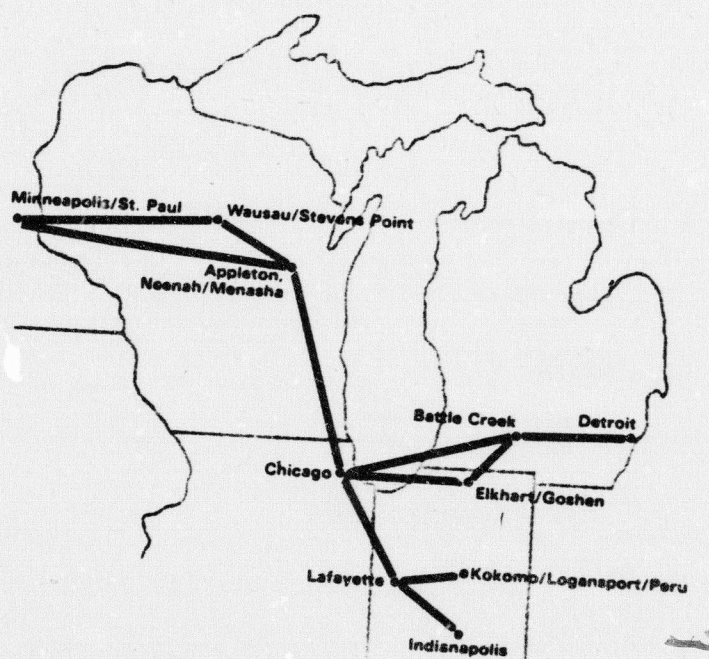
for ground transportation and other necessary services for the passengers.

Air Wisconsin supports the efforts and activities of ARINC in the procurement and provision of the most efficient and effective private line communications system and interline electronic switching system practicable for the air transport industry. This system has been instrumental in implementing the goal of Air Wisconsin and other commuter air carriers to become fully integrated into the nation's air transport system.

Respectfully submitted,

AIR WISCONSIN, INC

December 11, 1974

AIR WISCONSIN, INC.

Vincent J. Mullins, Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: Regulatory Policies Concerning Rules
and Shared Use of Common Services and
Facilities, Docket No. 20097

Dear Mr. Mullins:

Transmitted herewith are the original and 14 copies of the Comments of the Air Transport Association of America and Representative Member Airlines, by way of supplement to and in support of the Comments being filed contemporaneously herewith by Aeronautical Radio, Inc., in the above-identified proceeding.

The Comments transmitted herewith consist of the following:

1. Statement of Paul R. Ignatius on behalf of the Air Transport Association of America.
2. Statement of George A. Buchanan on behalf of the Air Transport Association of America.
3. Statement of Glen W. Belden of United Air Lines, Inc.
4. Statement of Robert D. DeLoach of Eastern Air Lines, Inc.
5. Statement of Robert F. Roland of Allegheny Airlines, Inc.

Mr. Vincent J. Mullins, Secretary
Federal Communications Commission
December 11, 1974

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The Air Transport Association of America reserves the right to file such further reply comments and responses as may be appropriate in light of the comments filed by other participants in this proceeding.

Respectfully submitted,

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FCC Docket No. 20097
Airlines Exhibit No. 1

STATEMENT OF PAUL R. IGNATIUS
on behalf of
THE AIR TRANSPORT ASSOCIATION OF AMERICA

My name is Paul R. Ignatius, and I am President of the Air Transport Association of America (ATA). I joined the Air Transport Association (ATA) in February, 1972 as executive vice president and in December, 1972 was elected president by the ATA Board of Directors. In December, 1973, I was elected to the additional position of chief executive officer.

ATA is an unincorporated non-profit trade and service association composed of common carrier members constituting virtually all of the United States flag lines authorized and required under certificates of the Civil Aeronautics Board to provide regularly scheduled air transportation over established routes. It was organized in 1936 to serve the public, the airlines and the government on behalf of its member airlines in a wide range of activities, from the improvement of safety to planning for airline participation in national defense.

Together the various airlines compose a total transportation system operating over more than half a million miles of routes, crisscrossing America and fanning out into practically every corner of the globe. The airlines are vigorously competitive among themselves in their efforts to bring the benefits of scheduled airlines service to the traveling and shipping public. They work together, however, in matters of safety, technological progress, communications, and in many areas of service improvement.

ATA was organized in 1936 to represent its member airlines in a wide range of activities, from the improvement of safety to planning for the airlines' role in national defense. It serves as the vehicle for cooperation among the airlines in the following functions:

- a. ATA is the focal point for a three-tier structure of industry-wide committees, operating under the ATA Articles of Association within specific areas of expertise. The top tier of this structure consists of four councils (the Airline Operations/Technical

Council, Economics and Finance Council and Government and Public Affairs Council and Law Council) and the Air Traffic Conference. Appropriate committees and task forces are established within each of these disciplines. To assist in this function, ATA has departments paralleling those of an airline. An Economics and Finance Department, for example, works with its counterparts from the airlines to simplify and improve accounting procedures and develop economic studies in areas of industry interest. The broad field of flight operations, flight safety and air-ground as well as point-to-point communications falls within the Operations and Airports Department. Service improvements for passenger and cargo are an important part of the Traffic Department's day-to-day work. Air transport matters at the state and local level and in the international field are handled by the Public Affairs and International Departments, respectively.

Many of the airline industry standards and agreements arrived at by the ATA members are applied on a world-wide basis.

b. ATA is a spokesman for the scheduled airline industry before Congressional committees and regulatory agencies. Presenting the industry's position falls often to ATA's president and its individual department heads.

c. ATA is a repository for information about the airline industry, gathering data and assessing trends. It has the world's most comprehensive library on the past and present of United States scheduled airlines. ATA's Public Relations Department communicates information about the airlines to specialized groups such as students, educators, and the financial community, and to the general public, through its own publications and through the media of radio, television, and the press.

The airline industry, a regulated industry licensed to operate in the public interest, is a major dynamic force in the American economy. In 1973, 32 scheduled

United States carriers, with 2,360 aircraft in service, enplaned more than 202 million revenue passengers, and flew approximately 162 billion passenger miles, 4.7 billion freight ton miles, 602.7 million priority and 595.2 nonpriority United States mail ton miles, and 100.4 million express ton miles. The airlines averaged 14,000 scheduled daily flights during 1973, serving 537 domestic and international airports, and took delivery of 137 new jet and turboprop aircraft valued at \$2 billion during the year.

Statistics of a CAB staff study, "Forecast for 1972 of Scheduled Domestic Passenger Traffic for the Trunk Airline Carriers" released in November, 1972, contain three forecasts for the period 1973 to 1981. The average annual compound growth rates range from 7.9 per cent to 12.8 per cent.

The new look in air transportation equipment has come about because of the extraordinary investment the airlines have made in new jets and related equipment. At the beginning of 1956, at the threshold of the jet era, the total cost of aircraft equipment in scheduled service was \$1.3 billion. Five years later, the total

had risen to \$3.3 billion. At the beginning of 1974, despite large scale retirements of piston and turboprop aircraft, the total cost of equipment in operation had reached about \$13 billion.

The rate of growth of the airlines, it is estimated, will be at an accelerating pace. It is estimated that by 1980, the airlines will be flying 530 million passengers, over double today's level.

The Federal Aviation Agency has predicted for the decade 1974-1985 that the number of passengers will increase from 197 million to 530 million, and revenue passenger miles will more than triple from 158 billion to 495 billion.

There has been a close relationship between airlines development and growth and the availability of bulk communications services, and particularly ARINC's Private Line Intercity Network (PLIN). Essential to the operation of the airlines industry and its continuing growth has been the availability of "a rapid, efficient, nation-wide, and world-wide wire and radio communication service with adequate facilities at

reasonable charges", as well as "the safety of life and property", as provided in Section 1 of the Communications Act of 1934, as amended.

The air transportation industry's communication requirements are unique. The aircraft, the source of its revenue, must have a high load factor and be kept in operation. Its seats and cargo space must be as nearly full as it is feasible to achieve. It costs little more to operate a fully loaded aircraft than a partially loaded aircraft. The airline industry cannot survive with lightly loaded aircraft. Rapid, effective communications with the public who may utilize air transportation are necessary to market the passenger miles and ton miles of the airline industry. The industry's financial performance depends upon its success in merchandising a most perishable offering, for once the aircraft leaves the gate, empty seats and empty cargo space are of no value. The daily utilization of the aircraft must be kept high. Ten hours or better represents reasonable utilization and can be achieved only with excellent management of airline flight operations, including full knowledge of the

needs of the airplane, the crew and passengers. Effective, rapid information exchange among the various airline departments to fill these needs is necessary.

Safety is no accident. Effective, reliable, instantly available communication with the aircraft is necessary to maintain safe flight operations. Information exchange between the aircraft and the supporting departments of the airline permits the airline industry to maintain safe flight operations. The requirement for effective communications, both with aircraft and with future offices in other cities led the airlines to create ARINC 45 years ago, and makes necessary a fully integrated communications network, available wherever the aircraft are operated. The world wide flight operations requirement of the airlines, the need for keeping the aircraft as fully loaded as possible, the need for good utilization of the airplane, all accomplished safely and efficiently, make the airlines' need for excellent supporting air-ground and point-to-point communications absolutely essential.

The statements on behalf of other representative member airlines in this proceeding exemplify the close and special relationship between communications and air transportation. It is no mere coincidence, I believe, that the greatest period of the use and reliance by the airlines upon communications to perform their missions has been contemporaneous with the availability since 1961, first of shared TELPAK service and then later an integrated, industry bulk communications network through ARINC, as a classic example of a developmental offering of bulk rates inducing a broad expansion of communications uses to increase and improve service to the public.

The air transportation industry's communications system, it is understood, includes, among other facilities, 4,659,648 equivalent voice grade channel miles terminated for use, and approximately \$250 million in data processing equipment currently owned or leased for passenger reservation requests. The industry is the largest private user of AT&T's private line services, second only to the United States Government.

When the TELPAK services were offered early in 1961 at attractive rates, the airlines urgently needed communications innovations to permit them to cope with the operative problems of jet aircraft, accelerating passenger and freight movement occurring from use of jet aircraft, and they responded by substantial additions to their communications facilities and expanded uses of communications services. Joint use of bulk communications facilitated major improvements in the handling of flight operation progress information, passenger and cargo reservations and information, ticketing, specialization of personnel assignments, centralization, and speed-up of most functions, elimination of cumbersome manual methods of seat inventory control, application of data processing to record keeping generally, and improvement of technical services, maintenance control, meteorological information dissemination, dispatch, planning, and other important functions.

Because of the airlines' historic dependence upon efficient communications and the requirement to make those communication facilities more efficient and effective, TELPAK sharing was abandoned by the airlines in 1969

in favor of ARINC obtaining from the common carriers the requisite private line facilities. ARINC was able as the airlines "single customer" significantly to improve the efficiency of the integrated aeronautical communications network used by the airlines and to eliminate the uncertainties and procedural difficulties inherent in "sharing" a complex network, such as the former shared TELPAK network. Under shared TELPAK, the availability of additional communications facilities for a given airline could be dependent upon available excess capacity in existing TELPAK sections or upon the airlines storing up "spares" against future requirements. Now, the airlines go to ARINC for service and that service is provided by the best means available at a cost which reflects the overall system cost, rather than the happenstance of the facilities actually assigned to a specific circuit.

ARINC's customer status is reflective of the status that ARINC would have as the licensee of an industry private microwave system; indeed it is reflective of ARINC's current status with respect to microwave systems and international point-to-point services now operated

for the aeronautical industry. This status, accorded in both ARINC's radio and ARINC's private line services, also reflects the high degree of interdependence of the airlines one upon another. The airlines have traditionally cooperated with each other in the promotion of safety and convenience for the traveling public. The airlines require extensive intercommunications among each other to pool spare parts, establish common ground handling services, and expedite interline service. Some 30% of airline travel now involves more than one carrier. ARINC's private line and electronic switching services are essential in these operations.

The airlines are very dependent upon continued availability of an integrated industry communications system at reasonable charges to discharge their responsibilities. Adequate communications at reasonable charges are absolutely necessary if the airlines are to meet increasing requirements for efficiency and safety of service. The availability of bulk communications services at reasonable rates already has greatly facilitated major improvements in all aspects of the airline industry's functions, and it has been a primary factor contributing

to development of specialized personnel and specialized methods committed to more effective and more efficient performance of the airlines' missions.

Projections of growth have been made upon the anticipation that adequate, efficient, and reasonably priced industry communications such as ARINC's private line services will continue to be available. The CAB has recently authorized industry discussions concerning the development of a common automated reservations system linking outside travel agencies and corporate travel departments by wire to the various carriers' computerized reservations centers. Ticketing 300 million people a year by hand would not only be burdensome, it would probably be impossible. The airlines have already made a head start on overcoming this mountain of paper by developing plans for a completely automatic, vending-machine-type ticket facility. If technology can match the airlines' ambitions in the mid or late 1970's a passenger can go to his shopping center, for example, and insert a plastic card, punch a button to see if there is a seat available on tomorrow's flight to Chicago, get an affirmative answer, punch another button and have a ticket

drop into his hand -- confirmed, recorded, and ready to use.

However, the airline industry has become increasingly concerned with the increasing financial pressures from such factors as the nearly triple rate of equipment expenditures necessary to meet the air transportation needs of the next decade, the energy crises and the increased cost of fuel, the probable costs of solving social problems such as noise and air pollution, the price of congestion relief on the ground and in the air, the expenses of continued safety improvements, and the leveling off of unit cost improvements. Among the factors to be considered, it is to be noted that although total operating revenues have increased, net revenues have been steadily declining; the major replacement of turbo-prop and piston aircraft with two or three engine jet aircraft has not brought about the same unit cost reductions as the earlier changes of piston to long-range jet aircraft; revenue growth has not kept pace with the growth in added investment and related expenses; there has been a decline in average net revenue because of the substantial

increase in lower yield coach traffic, in promotional fares, and in the cargo business with a substantially lower yield per ton mile than passenger operations; and there has been a substantial increase in operating expenses.

Over-all, it may be said that operating revenues are characterized by continued high growth, but operating expenses by an accelerated rate of increase, while the profit margin is down, investment turnover is down, the rate of return is down, yields are down, the margin of unit revenue over unit costs is down, and the margin of actual against breakeven payload is narrowing.

Computations furnished by ARINC reflect that as of September 1, 1974, the present annual airline bill for ARINC's private line service (a network providing the industry with some 4.7 million voice channel miles of service) is about \$60 million. Assuming no reduction in communications this figure would increase to approximately \$100 million at present rates if ARINC were not the customer. In my judgment, the airlines cannot and will not absorb a substantial increase in rates of the magnitude which would result if ARINC's customer status were eliminated, or if other changes were made in the

tariff offering resulting in a substantially similar increase in rates, and would turn to one or more of several communications alternatives available to the airline industry: (1) a private microwave system; (2) the service offered by specialized communications common carriers; (3) the services of domestic satellite carriers; or (4) some feasible combination of the other three.

In Docket No. 18128, ARINC submitted a study by Collins Radio, the largest independent manufacturer of microwave radio systems in the United States and a firm with extensive experience in installing microwave and carrier systems throughout the world, of a proposed nationwide aeronautical system to meet the needs of the airline industry through 1980. The total system, estimated at three times the circuit requirements of the industry in April 1970, would provide service at 307 locations with 102,941 voice channel ends, at a total capital cost for the system estimated at \$254 million, and annual cost for operation and maintenance at \$20.6 million. ARINC also estimated the cost of additional equipment and common carrier facilities to extend this aeronautical microwave system to the full

893 points now requiring service, but at projected levels of use in the 1980's: *

FULL SYSTEM COST COMPARISON

<u>Private System</u> <u>Annual</u>		<u>TELPAC/IXC (Current Rates)</u> <u>Annual</u>	
Collins System	\$20,572,401	Line Haul	\$ 85,599,132
opng/mntc		Off Sys. IXC	3,906,000
Capital Rcvry	26,798,059	Service Terms.	59,542,110
End Distrib.	<u>26,916,096</u>	Admin/G&A	656,000
Per ARINC Ex. 6	\$74,286,556		
Add Suppl. Costs	<u>16,930,047</u>		
	\$91,216,603		<u>\$149,703,242</u>
			<u>-91,216,603</u>
			\$ 58,486,639

Recognizing the advantages of economies of scale available to a common carrier, the airline industry might be reluctant to assume the capital investment of a private microwave system if bulk communications through ARINC were available to the industry at the September 1, 1968 level.

* See ARINC Exhibits 9 (revised) and 10, Docket No. 18128.

However, in the event of the impairment of ARINC's customer status or the imposition of rate increases having an impact of the magnitude of the February 1, 1970, increase (still in litigation in Docket 18128) the airline industry would probably be constrained to turn to private microwave as an acceptable, practicable, and desirable alternative. Among the advantages of a private microwave system under these circumstances would be the following:

- a. Most substantial savings in costs.
- b. Substantial growth capacity in recognition of the growing communications requirements of the airline industry.
- c. The ability to project plans with a reasonable assurance of the stability of anticipated costs, without the danger of fluctuating increased costs of communications.
- d. The independence, flexibility, and reliability assured when the airlines own and control their own system.

With the First Report and Order of the Commission in the Specialized Common Carrier Inquiry, Docket No.

18920, in June, 1971, and the Second Report and Order of the Commission in the Domestic Satellite Inquiry, Docket No. 16495, in June, 1972, there have also become available to the airline industry the services of specialized and domestic satellite carriers able to meet the requirements of the industry. ARINC has already turned to the special carriers for the provision of some private line services, and may be expected to look increasingly to both types of new carriers to supply or supplement its requirements.

If the present ARINC customer status is preserved, if TELPAK rates are rolled back to the September 1, 1968 level, as under study in Docket No. 18128, and some reasonable measure of stability could be assured, I would recommend that the airline industry continue to rely largely upon common carrier provided private line services. However, if the present single customer provisions were eliminated or the rates not rolled back, or if the uncertainties of increases continue to persist into the foreseeable future, then it would be my recommendation that the member airlines at ATA look to the construction of a private microwave system along the lines proposed

by the Collins study, supplemented by specialized carriers and domestic satellite services.

In conclusion, it is my opinion that the following considerations should govern in preserving ARINC's customer status for the airline industry:

- a. The airline industry is intimately and importantly related to the public interest.
- b. Efficient operation of an airline depends upon filling the aircraft, and high utilization of the airplane, both consistent with safe flight operations. These requirements merge into the need for an effective, well integrated air-ground and point-to-point communications network serving domestic and world wide flight operations.
- c. Efficient operation and the growth of many private and public services depend to a considerable extent upon further development of airline functions, capacity, efficiency, and safety.
- d. Since communication costs are important factors in the fuller utilization of communications services by the airlines, the level at which rates on TELPAK C and D, or some substitute

bulk offering, are set will become an important factor in determining the rate of progress in efficiency and safety in the airline industry.

e. The elimination of the "single customer" concept (as implemented by ARINC's PLIN) would be significant, and for some airlines critical deterrents to development of communication uses. In this connection, it should be added that the airlines appear to have entered a period of cost pressures, which cannot be offset by economies derived from rising volume, and that airline profits generally are falling. It is likely to be increasingly difficult for airlines to absorb increased communications costs without increasing their charges.

f. The airlines potentially are very large users of bulk communications services, with increasing utilization in prospect if the services are available at reasonable, competitive cost.

g. The airlines should benefit from the economies realized from their collective use of carrier services through their communications

company ARINC, as well as from the growth in use by others.

h. Since TELPAK users were encouraged to use carrier facilities for their bulk communications needs by past rates, and were thus turned away from private microwave systems, the cost to the airlines for such carrier services should be at least as low as the cost at which the airlines could now obtain equivalent services through an ARINC private microwave system or from specialized and domestic satellite common carriers, or some combination thereof.

FCC Docket No. 20097
Airlines Exhibit No. 2

STATEMENT OF GEORGE A. BUCHANAN
on behalf of
THE AIR TRANSPORT ASSOCIATION OF AMERICA

I. Description of the Air Transport Association of
America and the Air Traffic Conference of America

My name is George A. Buchanan, and I am Vice President - Traffic of the Air Transport Association of America and Executive Secretary of the Air Traffic Conference of America.

The Air Transport Association of America, commonly known within the aviation community as ATA, is the trade and service organization of the scheduled certificated airline industry in the United States. A list of the members of ATA is attached.

Formed by 14 airlines in the days of the industry's infancy, more than 30 years ago, ATA's membership today is comprised of 24 U.S. airlines -- virtually all of the certificated scheduled air carriers in the United States, plus two associate member airlines

based in Canada. These airlines provide a comprehensive range of domestic and foreign air transport services: the domestic trunkline carrier members operate between major traffic centers within the United States; the local service carrier members connect smaller cities with each other and with major traffic hubs; the international and territorial carrier members operate between the United States and foreign countries, as well as to, from and within various U.S. overseas territories; the intra-Hawaiian and intra-Alaskan carrier members serve points within these two noncontiguous states; the all-cargo carrier member operates scheduled flights carrying freight, express and mail; and the two Canadian carrier members provide service within as well as to and from that country. Together these airlines serve over 450 airports in the United States and Canada and link every significant community in North America by air with points in practically every corner of the globe.

The Air Traffic Conference is a division of the Air Transport Association. In this context, the

the word "Traffic" may be subject to some misunderstanding inasmuch as the Air Traffic Conference has nothing to do with matters related to the control of aircraft movements. Instead, "Traffic" in this context is a generic term which encompasses the marketing, sales, and customer service functions of the scheduled airlines.

The Air Traffic Conference is composed of 23 Regular Member airlines and 2 Associate Member airlines. All of the Air Traffic Conference members are either Regular or Associate Members of the ATA.

In general terms, the purpose of the Air Traffic Conference is to define, develop and promote those areas of sales and customer service where joint industry efforts, consistent with individual carrier competitive efforts, can improve service to the traveling or shipping public, broaden the air transport market, enhance the industry's image, streamline procedures, and/or reduce costs. Airline delegates to the Air Traffic Conference are usually marketing or sales executives of the carrier. Much of the work of the Conference is accomplished

through technical committees or sub-committees which concern themselves with such functions as improving the overall standard of reservations service to the traveling or shipping public, improvements in passenger or baggage processing equipment, methods and procedures, airmail and air freight sales and service matters, and so forth.

The Air Traffic Conference establishes industry standards through a number of inter-carrier agreements, in the form of resolutions which are the result of unanimous agreement among all member airlines.

The ATC resolutions cover a broad spectrum of subjects, from advertising code standards to the details of interline ticketing and interline reservations teletype messages. In the case of the latter, through the cooperative efforts of the Air Traffic Conference members and the member airlines of the International Air Transport Association,

there is now a world-wide standard for interline communications procedures and for the format and contents of interline reservations messages. As a result, any reservations office of any airline can communicate by teletype with the reservations offices of virtually any other airline throughout the world. Communications between airline reservation computer systems are also made possible through the use of these standards.

Hence, it can be seen that while the airlines compete vigorously with one another in the air transport marketplace, they also have, historically, cooperated closely with one another in the development and application of modern techniques and methods for providing the optimum in service to the traveling and shipping public. It is my judgment that only through this cooperative effort could the United States air transportation system have progressed to the point at which it is - the finest transportation network in the world.

II. Organization and Functions of the Airline Industry

The United States scheduled airlines serve well over 450 points in the United States and, of

course, each point may serve many nearby communities. The airlines provide service to our nation's largest metropolitan areas as well as small communities of only a few thousand population. Exhibit B is an airline route map which depicts the points served and the routes flown within the Continental U.S. by the scheduled airlines. As can be seen from this map, no location in this country is far from a city served by one of the airlines and, through the carriers' systems of connection at key cities, any point in our country is only a few short hours from any other point in the United States, or for that matter, in the world.

The airlines serve the public through the transportation of passengers, cargo and airmail. Additionally, the airlines are under a mandate to be responsive to this nation's national defense requirements. The demand for commercial airlift to support military commitments continues to grow. The airlines maintain the capability to be responsive to the shifting geographic requirements of the Defense Department

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and have provided the speed and capacity when needed to support the national defense concept of flexible response. World-wide, the United States Air Force estimates that commercial airline services accounted for over 975,000 passengers and nearly 29,000 tons of cargo transported by Military Airlift Command charters during 1973. Over 64 per cent of the total expenditures for movement of long haul traffic by Military Airlift Command was handled by the United States scheduled airlines in the fiscal year 1974.

Fulfillment of national defense requirements also dictates a strong commercial airlift force capable of instantaneous reaction to global defense needs. To meet this responsibility, the airlines presently maintain the Civil Reserve Air Fleet consisting of approximately 277 long-range jet and turbo-prop aircraft valued at \$3.5 billion. Flying peace-time commercial routes throughout the world, these aircraft can enter military service in 48 hours if the need arises.

Furthermore, the airlines serve the government's day-to-day needs for routine troop movements throughout this nation. In 1973, for example, the Military Bureau of the ATA arranged transportation for nearly 280,000 armed forces personnel.

The nation's airlines compete vigorously with one another. For example, trunk carriers compete in the important long-haul non-stop market between New York and San Francisco/Los Angeles with additional trunk carrier competition being provided out of intermediate connecting points. Trunk and local service carriers compete with one another in many shorter haul markets. It has long been an axiom in the airline industry that the airlines are one another's strongest competitors and at the same time their best customers. This latter point is so because of the high number of passengers and cargo shipments which utilize the services of more than one airline from origin to destination.

In 1973, the airlines carried more than 78% of the total common carrier inter-city passenger travel. In 1956, the figure was only 33%. Hence, it can be seen that the nation has come to rely upon the airlines for the provision of swift and efficient inter-city common carrier transportation.

No class of business in the United States, not even that of the pure public utilities, is more comprehensively regulated than the airline industry. This is in recognition of the fact that the industry is, by its nature, affected with a very substantial public interest .

At the Federal level, a detailed regulatory scheme covers literally every facet of the airline business. The economic regulation of the industry is in the hands of the Civil Aeronautics Board, while safety regulation is the function of the Federal Aviation Administration, with aircraft accident investigation being vested in the National Transportation Safety Board. Even the President of the

United States has certain direct responsibilities in relation to foreign and overseas route matters. Air carriers are also made subject to the Railway Labor Act and the jurisdiction of the National Mediation Board thereunder. Various state commissions also exercise a degree of economic control over the intra-state aspects of the airline business, including in many cases, intra-state rates, fares and charges.

Airline rates, fares, and charges are closely regulated by the CAB. In the exercise of its rate making powers, the Board must, under the provisions of Section 1002 (e) of the Federal Aviation Act, take into consideration, among other things, "the need in the public interest of adequate and efficient transportation of persons and property by air carriers at the lowest cost consistent with the furnishing of such service," as well as the companion "need of each air carrier for revenue sufficient to enable such air carrier, under honest, economical and efficient management, to provide adequate and efficient air carrier service." The air carriers

themselves have the affirmative duty to provide safe and adequate service, equipment and facilities in connection with the air transportation they are authorized and required to provide, and to do so economically and efficiently.

Thus, the comprehensive regulatory scheme under which the airlines operate provides both the mandate to keep costs at economic and efficient levels and the full regulatory machinery to require that this be done. Accordingly, any cost increases in any area must be reflected in the rate charged to the public.

III. The Use of Communications by the Airlines to Serve the Traveling and Shipping Public

The provision of communications services designed to provide the public with rapid and accurate information accounts for the greatest share of the United States scheduled airlines total communications expenditures.

The advent of bulk communications (Telpak) enabled airline customer service methodology to undergo revolutionary changes. While the economic aspects of this development are indeed significant, the advances made possible by shared Telpak, and later through ARINC's Private Line Intercity Network (PLIN), in terms of service to the traveling

and shipping public, are even more dramatic. The major areas in which improvements occurred deal with the handling of passenger and cargo reservations and information, ticketing and flight information (flight operation progress). To appreciate more fully the impact of the new concepts for customer service introduced by Telpak with sharing and improved through PLIN, it is necessary first to have some understanding of the methodology used by the airlines previously.

Airline reservations systems were composed of offices or divisions within an office at each city served by the airline connected by a teletype network covering the entire airline system. Included was a central office to control the inventory of seats on flights operated by the airline. Depending upon the volume of passenger traffic, and extent of related reservations duties, each location's treatment and/or handling of customer reservations varied considerably, including telephone conversational format, degree of employee proficiency, manner of record handling, standard

of telephone answering, and length of time required to process reservations. This was especially true of the federally-subsidized local service or regional type carriers, where an employee performed many functions, from loading and unloading airplanes to handling reservations and issuing passenger's tickets.

As the volume of passenger traffic increased, airline attention intensified through procedural refinements and greater devotion of employees full-time to the job of handling reservations. Nevertheless, there existed within the airlines reservations systems certain problems inherent in the methodology employed which could not be remedied without substantial and economically infeasible cost to the airlines. The need for improved performance and the means of accomplishment were imperative from both the customer's and the airline's points of view.

The red tape and time consumed in arranging air travel and air cargo shipments was of great concern, as was the airlines' inability to provide prompt and efficient service economically. Greater emphasis was needed on the services preceding and following the customer's use of flights. With the dramatically increased speed of the jet, the need for improvement in pre-flight and post-flight processing was likewise

dramatized. No longer could the airlines or their customers tolerate days - or even hours - to obtain confirmation of desired reservations, or the frequently extensive delays in even contacting the airlines by telephone.

Vague answers to reasonable questions had to be eliminated through specialization of employee assignment. Time-consuming and cumbersome manual seat inventory control procedures required streamlining.

In short, the whole process of reservations handling needed to be overhauled and the state of the art advanced through some key development. Efficient, economical communications provided that key.

Almost simultaneously, important improvements in Automatic Call Distributor systems enabled the airline industry to make greater use of communications. The Automatic Call Distributor speeds the handling of large volumes of telephone calls of the same type and is utilized extensively by the airlines for handling passenger and cargo reservation and information inquiries from the public.

Basically, the Automatic Call Distributor is a business telephone system that eliminates the

switchboard "middleman". The system receives the calls, automatically arranges them in order and distributes them evenly to the sales agent staff. If all the sales agents are busy, the system stores the incoming calls in order and releases them to the sales agents as fast as they become available. The result is better service to the public and increased productivity for the airline.

The Automatic Call Distributor system, including the numerous features designed to provide user efficiency, combined with Telpak produced a whole new concept for handling customer telephone inquiries - consolidation of the reservation function. This is accomplished by extending ARINC's PLIN telephone lines from separate cities terminating in an Automatic Call Distributor in a regional or central reservations office. Hence, although the customer may dial a local telephone number, the call may be answered by a sales agent at a consolidated office hundreds of miles distant.

The new concept is widely used by local service and trunk airlines alike. For example, Allegheny Airlines, a local service carrier, has a

centralized reservations office located in Pittsburgh, which services callers from 39 airport locations and literally hundreds of communities served by those airports. Hence, in the case of that airline, every telephone call from virtually every city served by the carrier is received in a consolidated office. Eastern Airlines serves the calling public throughout its domestic system through 10 regional offices.

Perhaps the most significant benefit to emerge from the new methodology has been the carriers' ability to standardize procedures and serve customers more uniformly. The airlines are now able to route calls from smaller cities, where employees perform a multitude of duties, to consolidated offices staffed by employees trained to be reservations specialists.

Through consistent application of procedures, refinement of standards relating to the level of service rendered to customers could be made and effectively monitored. Today, the airlines answer between 80 and 100 per cent of the calls from the public in less than 20 seconds. The quality of information has likewise improved and it is usual that the caller can complete his entire reservation during the initial call in less than 3 minutes.

While providing vastly improved service to the public, the airlines experienced increased levels of

employee productivity and utilization. The flexibility provided by the consolidated office concept has enabled the airlines to forecast and staff for expected workload more accurately.

Although a few airlines utilized computers to record seat availability information prior to the advent of Telpak, the introduction of this service coupled with the consolidated office concept has made possible great expansion of the application of modern data processing services to passenger and cargo record keeping. Prior to Telpak, relatively few airlines could justify the expense involved in providing real-time computer facilities at remote offices. However, consolidation has had the effect of bringing these location to the computer and thus economically justifying computerization. With this development, the efficiency of reservations offices and resultant benefits afforded customers intensified and the airlines were able to take in stride the tremendous growth which was to follow in the jet age. Many customer service improvements have been made through inclusion in the computers of such special features as fare calculation, ticket insurance,

flight arrival and departure information, inventory of seats sold and those available, passenger record data, communications message switching and cargo loading information. Hence, customers receive more dependable information practically instantaneously.

The airlines currently own or lease about \$250 million worth of data processing equipment to process passenger reservations requests and ticket issuance. This equipment includes computers that carry the seat availability on all but a small fraction of 14,000 daily flights.

The efficiency produced by consolidation and computerization has also resulted in service improvement at non-centralized office locations. This has been achieved through modernized telephone and teletype communications facilities afforded first by shared Telpak and later by ARINC's PLIN service. Additionally, through the use of direct telephone lines through ARINC, the general offices of airlines now function with the field offices in a real time sense, enabling operational decisions to be made at top

management level, when necessary, and within the scope of the airline's overall operation.

It is evident that all of these customer service improvements have been directly dependent upon the availability of the economic and efficient bulk communications services provided by a joint or cooperative use. The rates at which those communications services were made available represented an important factor in determining the extent to which such services could be utilized by the airlines. The rates also made it possible to accelerate substantially the introduction of the customer service improvements involved.

IV. Airline Growth

The history of growth of the airlines has indeed been phenomenal in terms of both service to the public, and in terms of airline traffic which that service has generated. Passenger traffic on the nation's scheduled airlines grew from 58.4 million revenue passengers in 1961 to 202.2 million in 1973. Freight traffic has grown at an even faster rate, from slightly less than 733 million revenue ton miles in 1961 to well over 4.7 billion revenue ton miles in 1973.

This rapid growth is expected to continue. The FAA's report "Aviation Forecasts - Fiscal Years 1974 -- 1985" predicts that the number of domestic passenger enplanements will increase sharply over current levels. By fiscal year 1985 the volume of passengers enplaned by the domestic scheduled airlines is expected to reach nearly 475 million.

Air transport today is the most important common carrier of passengers between cities. As indicated, more than 78 percent of all public transportation passenger miles are accounted for by the airlines. Given the present growth rate of air, by 1980 more than 83 percent of all inter-city traffic could well be carried by the nation's airlines.

Even more marked is the airlines' dominant position in carrying people between the United States and foreign countries. Last year, for instance, the airlines accounted for 93 per cent of all passengers between here and foreign countries. In 1956, the figure was 68 per cent. Given the current growth rate and the fact that technology is taking its toll of steamship traffic, the signs are that by 1980, 96 per cent of all traffic between the U.S. and abroad could well be carried by the airlines.

This anticipated future growth has resulted in an extraordinary airline investment in new jets and related equipment. As of July 1, 1974, the airlines had on order 137 aircraft valued at \$2 billion. On April 1, 1967, the total cost of all equipment in service was \$6.3 billion and the airlines jet fleet consisted of 1,000 planes. Today, in contrast, the total value of equipment in service is nearly \$13 billion and the airlines' jet fleet consists of over 2,300 aircraft. This investment will continue to grow, with the FAA projecting that over 2,700 jet aircraft will be in service by the beginning of 1977.

All in all, the airline industry has been characterized by dynamic expansion over the years. Although there may be short periods of flat traffic growth in the future, both governmental and private economists fully expect air transportation to continue to expand throughout the next decade and beyond.

The airlines are engaged in developing improved customer service concepts which will involve new bulk communications requirements. Increases in traffic of

the magnitude expected cannot be accommodated simply by adding personnel or leasing more space at airports. More sophisticated ways must be introduced to process passengers and their baggage, and at the same time to handle the even greater growth forecast for air cargo.

With passenger traffic on the U.S. scheduled airlines alone expected to exceed a million passengers a day within the next decade, ticketing by hand will not only become burdensome, it probably will be impossible. The airline members of ATA in cooperation with the world-wide airline membership of the International Air Transport Association have already made a head start on this problem by developing completely automated ticketing systems.

These systems provide for fare computation and ticket issuance by computer and automated methods of passenger check-in and boarding, aircraft loading control and baggage handling. When fully operable, the systems will perform the following functions:

1. Display and quote fares for nearly all world-wide itineraries;

2. Confirm a passenger's reservation and issue the ticket by extracting information from the airline's central reservations computer in a remote location.

In addition to the automated ticketing machines which are currently operated by airline personnel, it is contemplated that "self-ticketing" devices will be located at downtown airline terminals, airport parking lots, terminal entrances, as well as at the customary ticket counter and boarding gate positions; possibly even at other public areas such as neighborhood shopping centers. These self-ticketing devices will be used by those airline customers who hold credit cards. The credit card will be inserted into a slot on the machine, the passenger will depress buttons for his destination and class of service desired. From information encoded in the credit card, the central computer will be checked to determine the validity of the passenger's request and the appropriate ticket will be issued. The accounting process will also be handled automatically from the information derived from the credit card. Tickets will be designed in such a way as to serve as the passenger's "boarding pass"

through insertion in a separate device located at the aircraft boarding gate;

3. Reject used or invalid tickets and boarding passes and permit or prevent a passenger boarding based on the correct fare, reservations confirmation and ticket validity;

4. Instantaneously process no-show information and keep track of standby passengers according to priority;

5. Direct passengers to an airline employee for assistance when necessary;

6. Provide continuous information to the airline on the number of passengers boarding an aircraft, according to destination, class of service and class of travel;

7. Automatically provide alternative routings for passengers in case of flight cancellation, equipment change or other similar circumstances.

The need for extensive high speed communications networks is obviously fundamental to such systems since all functions of the systems rely upon information stored in computers at remote locations.

The automated ticketing system currently in use and the vending type systems planned for the future will be a major step in eliminating airport terminal congestion.

The airlines have conducted several studies in the past as to how best to expand the use of computer technology in the passenger reservations and ticketing fields to travel agents. A new study of this subject is just getting underway. The need for adequate, efficient, and economical bulk communications facilities in connection with any resultant system is obvious.

By their very nature, the new customer service concepts described above will require a greatly expanded airline use of private line facilities and still increased amounts of intercommunication among airlines. The feasibility thereof will, in turn, be dependent on the cost at which such services are to be made available to the airlines, just as it has in the past.

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American Airlines

Braniff Airways

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Continental Air Lines

Delta Air Lines

Eastern Air Lines

The Flying Tiger Line

Frontier Airlines

Hawaiian Airlines

Hughes Airwest

National Airlines

North Central Airlines

Northwest Airlines

Ozark Air Lines

Pan American World Airways

Piedmont Airlines

Southern Airways

Texas International Airlines

Trans World Airlines

United Airlines

Western Air Lines

Wien Air Alaska

* Associate Member



LEGEND

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NOTES

1. In the legend, the letters A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, and the numbers 1 through 100 are used to identify the various points and lines on the map.
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STATEMENT OF GLEN W. BELDEN
UNITED AIR LINES, INC.

I. Position and Responsibilities

My name is Glen W. Belden, and I am President and Chief Executive Officer of the Computer and Communications Services Division and a Vice President of United Air Lines. I have the responsibility to exercise general and active control over all business and affairs of the Computer and Communication Services Division, including the procurement of all communication facilities and services for the company. Also falling within my purview is the responsibility to administer the development of the Division and to establish major policies, objectives, and strategies for the Division.

II. United Air Lines Operations Involving Bell's Private Line Communications

Organization

United Air Lines, Inc., is a corporation organized under the laws of the State of Delaware with executive offices at 1200 Algonquin Road, Elk Grove Township,

Illinois. Pursuant to authority conferred by certificates of public convenience and necessity issued to it by the Civil Aeronautics Board under the Federal Aviation Act of 1958, as amended, United is authorized to and does in fact engage in the transportation of persons, property, and mail by aircraft in interstate and foreign commerce. United holds certificates to serve 92 points in the United States and Canada, and through such certificates serves 118 cities. Its route mileage totals 19,255 miles and includes such western points as Honolulu, Los Angeles, San Diego, Seattle, and San Francisco; such eastern points as New York City and Washington, D.C.; such northern points as Minneapolis, Vancouver, British Columbia, and Toronto, Ontario; and such southern points as Miami and New Orleans.

In 1973 United carried in excess of 31 million revenue passengers and flew over 29 billion revenue passenger miles (1 revenue passenger carried one mile), using a fleet of jet aircraft which as of July 1, 1974, totaled 369 in number. United provides regularly scheduled air transportation

service to the public over its routes on a 24-hour per day, 365 day per year at the rate of 1535 departures per day. With modern aircraft which travel over such routes at speeds up to 600 miles per hour, high-speed, efficient communications between points served by United are vitally essential to its operations.

Federal Regulations

The federal government has imposed numerous duties and obligations with respect to the airline's operations. Without attempting an exhaustive exposition of the duties imposed upon United by the Federal Aviation Agency and the Civil Aeronautics Board, a number of the obligations which have a direct connection to United's communication requirement will be described.

By reason of its status as a common carrier by air, United has an obligation to provide "safe and adequate service, equipment, and facilities in connection with such" air transportation. 49 U.S.C.A. §1374.

The Administrator of the Federal Aviation Administration is empowered, and a duty is imposed upon him by 49 U.S.C.A. §1421, to promote safety of flight by, among other things, prescribing rules, regulations and standards governing the "inspection,

servicing, and overhaul of aircraft" and other practices and procedures as the Administrator may find necessary to provide adequately for national security and safety in air commerce. In prescribing such rules and regulations he is required to give "full consideration to the duty resting upon air carriers to perform their services with the highest possible degree of safety in the public interest."

By 49 U.S.C.A. §1425, there is imposed on air carriers the duty to make "such inspection, maintenance, overhaul and repair of all equipment used in air transportation" as may be required.

Regulations of the Civil Aeronautics Board require that certified carriers maintain their posted schedules. Monthly reports showing the degree of "schedule arrival performance" must be filed with the C.A.B. 14 C.F.R. Part 234.

Airline Cooperative Arrangements

The concept of shared facilities and joint or cooperative use by the airlines is an established congressional policy. Thus, in 49 U.S.C.A. §1382 Congress expressly recognized that it was in the public interest for air carriers to enter into agreements and arrangements for "pooling . . . traffic, service, or equipment" or for "preserving and improving safety, economy, and efficiency of operation," or for regulating

"schedules, and character of service, or for other cooperative working arrangements.

There are probably few areas in the airline industry that have not at one time or another, in varying degrees, with the Civil Aeronautics Board's approval, seen cooperative arrangements or the pooling of resources. The purpose is to achieve optimum utilization of equipment and facilities, to avoid unnecessary and wasteful duplication and cost, or to provide greater passenger convenience. Examples would include: (1) interchange agreements whereunder two airline which have a service point in common will exchange aircraft which have come from another point on the route system of one of them and fly the aircraft to a point on the route system of the other thus giving passengers through (single plane) service; (2) airlines with major maintenance bases contract maintenance and overhaul for other airlines. United performs this type of service for 35 certificated, supplemental, and foreign air carriers which service will gross an estimated 54 million dollars in 1974; (3) at smaller stations, one airline may provide on or more services such as ticketing, passenger handling, meal service, baggage and cargo handling for other airlines; (4) pilot training is often supplied by one airline for another; (5) consolidated airlines ticket offices and joint airline military ticket offices are managed by one airline for the other airlines; (6) through the Air Transport Association, the airlines

have developed or are developing an aircraft transponder system (enabling control towers to electronically identify aircraft by airline and flight number on their radar scopes), and an electronic collision avoidance system.

The System Operations Control Function

There are many important operational tasks by which United carries out the mandates imposed upon it by statute for safe, scheduled operation which are critically dependent upon point-to-point communications facilities provided by ARINC. One division of United is the System Operations Control Department which has a major requirement for both voice and record communications. This requirement, with some exceptions discussed below, is primarily concentrated in the System Operations Control Center in United Air Line's executive offices.

a. Basic Responsibilities

The System Operations Control Center is responsible for the day-to-day and hour-to-hour operation of the airline. The System Operations Control Department is responsible for the overall system operation of the Control Center

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but Flight Operations also has a crew scheduling contingent assigned there.

All of the operating departments engage in considerable advance planning - far enough in advance for these plans to be distributed by mail throughout the system. In addition to the published Flight Schedule, there are established plans such as routine maintenance plans, crew routing plans, diversion plans in the event of severe weather or other operating conditions at on-line stations, and pre-planned airplane routings at flight turnaround points.

The Control Center therefore exists primarily to coordinate on short notice the airline's responses to unpredictable (or at least unpredicted) events or combinations of circumstances. The nature of this coordination calls for quickly available two-way communications to many widely dispersed locations. To accomplish this function, the Control Center requires the primary use of several voice circuits which permit service via ARINC private line service to most UAL stations.

Computer message service using ARINC provided private line circuits is also used extensively. In addition, the Control Center has 17 computer terminal sets connected to a computer via data circuits which permit an immediate check of passenger bookings on particular flights, aircraft routing, and other information.

b. Aircraft Routing

Probably the most basic of the Control Center's responsibilities is the routine routing of aircraft -- that is, assignment of specific airplanes to specific flights. The routing of aircraft for all inspections and maintenance work on specific airplanes is also included in this function.

While a general routing plan for the turnaround of aircraft exists, numerous modifications of the plan are required daily, primarily as a result of mechanical problems, weather problems, extra flying needs, and routine maintenance routings. Most irregular

routings are arranged via voice communication and confirmed later by a printed message routed by a computer, both over ARINC provided private line circuitry.

c. Mechanicals

Minor mechanical problems can have a substantial impact on schedule performance.

Depending on the timing and location of the "mechanical" there can be several alternatives for "balancing" the system:

- (1) Delay the flight on which the mechanical occurred until the airplane is fixed.
- (2) Cancel the flight on which the mechanical occurred.
- (3) Substitute airplanes, possibly using one of a different type than scheduled and possibly involving a "ferry" flight from another station.

Any of these alternatives may also involve establishment of an "A" section downline (using another airplane), for the protection of downline passengers. In addition to the availability of

aircraft at the various stations involved, it may be necessary to check crew availability, planned maintenance routings, and the passenger loads booked on various trips. Meanwhile, the estimated return-to-service of the airplane which had the "mechanical" may change. Ultimately, the decision will be based on passenger convenience (local and downline), and the downline impact of the various alternatives. Obviously, this sort of situation must be resolved quickly, with no advance notice. Immediate voice communications with more than one department of United Air Lines at several locations is essential. If fast communications were not available, it would be impossible to arrange operations on other than a local basis - thus adversely affecting efficiency of United's system operation by eliminating the possibilities of ferrying, "A" sections, moving in crews, mechanics, or parts. Schedule dependability and passenger convenience are founded on a nationwide immediately available communications service.

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d. Weather and Airport Conditions

The most demanding situations are those involving weather and airport conditions. Elaborate advance plans have been prepared and published, indicating alternate airports to which the flight should go, in order of preference, if the flight must divert. These plans are most useful, of course, when several hours of advance notice is provided, in which case several preliminary steps are taken. These preliminary steps include confirmation that the acceptance capability at alternate airports which was incorporated into the plan actually exists today. Additional employees may be called to work, ground transportation alerted, feeding arranged and hotel capacity confirmed. These steps, of course, involve considerable voice communication with the Control Center since many stations and departments may be involved. As the weather deteriorates, actual routing instructions are made; these may range from holding at upline points to overflying, diversion, or cancellation.

This communication continues throughout the period of low weather or inoperable airport conditions

and for some time thereafter until system balance is once again established. If key cities are involved, the entire system can be disrupted, calling for continuous decision making in the routing of aircraft. Clearly, at such times the immediate availability of voice channels to all parts of the United Air Lines system is essential if necessary high safety standards are to be kept and if any semblance of order is to be maintained in the operation of the airline. Passenger convenience and schedule dependability and safety are thus directly dependent on our communications capabilities during these periods of irregular operations.

e. Extra Flying

By "extra flying" is meant non-scheduled revenue trips flown as Advance or Extra Sections or as Charters. The operation of such flights and the planning involved in the last three days prior to the date of departure are handled by the Control Center. Advance Sections operated

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as extra airplanes paralleling scheduled flights) and Extra Sections are set up by both the Control Center and Charter Marketing Department on the basis of projected unsatisfied demand for particular flights as reported through United Air Lines' computerized reservations system. Charters are generally set up by the Charter Marketing Department with several weeks (or more) lead time.

f. United's CRAF (Civil Reserve Air Fleet)

United's CRAF commitment to the Federal Government involves an implied communications capability since it would be required to operate "Senior Lodger" stations at Honolulu and San Francisco, as well as handle the United CRAF airplanes when flown domestically. Such an operation would require a communications capability comparable to that employed in today's commercial operation.

Computer Technology

United Air Lines uses computer technology in conjunction with ARINC private line services to enhance

the safety and reliability of it's operations in numerous areas. Some important examples are covered in the following:

a. The Automatic Flight Planning and Monitoring System - (AFPAM)

Since 1960, United Air Lines has been using computers to perform its flight planning tasks. Since February, 1972, three Univac 1108 computers (the Unimatic system) located in the Executive Offices have been utilized to provide a data based Automatic Flight Planning and Monitoring system (AFPAM). AFPAM computes the logistics for approximately 800 daily long range (over 350 miles) commercial flights, as well as for unscheduled air charter flights. The system uses 150 computer terminals located at United's Operations Control Center and at three Divisional Flight Dispatch Centers at Dulles, San Francisco and O'Hare International Airports and 79 flight originating stations. The computer is connected with all of United's Operations offices at each airport served, the Flight Dispatch Centers,

the Operations Control Center, as well as with the National Weather Service, which provides aviaional digital forecasts for the entire globe (Marsden Square) every 12 hours. The computer terminals are capable of inter-communications as well as providing direct communications with the computer for entering flight planning parameters, altering the variables of a given plan, requesting weather information and the like.

Into these computers are fed all of the available data necessary to develop optimum flight paths, altitudes, fuel loads, and alternate airports for each flight. Upon being queried by a dispatcher, the computer will transmit three possible flight plans. These three plans are then reviewed by the pilot and the dispatcher and a decision made as to which flight plan to follow. Each plan includes:

- (1) Fuel, itemized according to flight consumption, amount remaining at destination, amount for alternate airport, and total amount on board;

- (2) Weight at takeoff without fuel including cargo maximum allowable, weight at check points along the route with corresponding information indicating number of miles from previous point, altitude, temperature, time expended, air speed, wind, ground speed, fuel consumed, and fuel remaining;
- (3) Alternate airport in case of inclement weather or other developments. Each flight plan includes flight time and fuel required to complete it with the aircraft flying at altitudes other than the one designated in the plan; and
- (4) Navigational data, including magnetic headings and true course headings for over-water routes.

Each flight plan generated by the AFPAM system is sent to the station where the flight originates and the controlling flight dispatch center to be reviewed by the crew involved. When the flight plan is agreed upon it is validated and sent to each enroute station.

The flight plan is then stored in the AFPAM computer and periodic checks are made on flight

progress. This aspect of the system is constantly updated by input from pilots through flight radio reports. The computer then matches what is actually happening to the flight plan. If a planned report of flight progress is not made at the time provided in the flight plan, the computer flashes an alert to the appropriate flight dispatcher. He has ten minutes to resolve the problem before he is alerted again. The second alert also goes to the control center. After the second alert both dispatchers and supervisors are alerted again after a ten minute interval.

b. The Jet Engine Monitoring System

United is currently monitoring daily engine performance on 304 UAL aircraft involving 1041 installed engines. Performance data on each engine is sent over the Unimatic system from 60 line stations throughout the United system to San Francisco where it is fed into a computer and is available for analysis each morning by engineering monitors. In the past, this system has been used in combined Federal Aviation Administration/United Air Lines reliability studies.

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Changes or trends in engine performance which are not always obvious to flight crews or ground mechanics servicing the aircraft are detected by these monitors. A significant change in engine performance will trigger line action to correct the situation. During the first ten months of 1974, for example, 24 UAL engines were removed following detection or confirmation of adverse performance trends by the flight log monitoring program (FLM). Additionally, the program produced the following benefits during that period:

- (1) 11 customer engines were removed after detection of adverse performance trends;
- (2) 381 messages directed line maintenance action on engine related systems (instruments, pneumatics, etc.) whose failure was detected by FLM but was undetected by flight or ground crews; and
- (3) Flight log monitoring data was used by Operational Engineering for:
 - (A) Engineering fuel conservation program.
 - (B) Quarterly aircraft performance surveys.

c. Other Applications

Other Applications which represent a high level of computer technology and which provide both for passenger safety and service are:

- Flight Information
- Aircraft Routing
- Irregular Operations Planning
- Aircraft Maintenance History
- Crew Management System
- Recoverable Parts Control System
- Passenger Reservations
- Passenger Automatic Check-In
- Passenger Automatic Ticketing

The Maintenance Engineering Private Line Telephone System

Maintenance, line and overhaul, has a direct relationship to maintaining established schedules and to safety in flight as required by statute. An exceedingly important part of the United Air Lines communications network and one which complements essential services for the safety of aircraft in flight is the so-called Maintenance Engineering System. It connects engineering,

shops, offices, and planning centers at United's Maintenance installations systemwide on a 24 hour basis.

United Air Lines, like other carriers, has developed a total maintenance system for each type of aircraft that it operates. As a part of this system, it has centralized in San Francisco its total engineering, technical inspection, and maintenance control effort so as to be able to make maximum use of its technical ability and yet have all the necessary engineering disciplines available to the entire airline as rapidly as possible. This engineering and maintenance organization provides all technical instructions regarding the operation and the maintenance of all its aircraft, for example, how it should be operated, when it should be inspected, and what type of check the equipment must pass. Not a small part of its job is to develop improvements based on the experience of United and others to enhance the safety and reliability of the operation and, of course, to improve its economics.

The maintenance work on United's aircraft, engines, and components is handled by a six level system, each level being a more extensive type of maintenance than the lower level.

The first, or lowest level, is a #1 service check made before departure of each flight and consists primarily of ascertaining that all doors are closed and all ground equipment is clear and no obvious damage.

The second level is called a #2 service check and is made at each station having mechanics. It is a more detailed visual check with particular attention being paid to fuel or oil leaks and other items such as worn tires, fuselage or wing damage, or a low landing gear strut.

The third level is called an "A" check. This inspection is completed at least once every 100 flight hours. This check includes all of the work of the #2 service check, plus examination of the various system oil supplies, engine inlet, exhausts areas, landing gear, brakes, exterior lights and servicing other systems, such as the oxygen, flight recorder, power units, and aircraft batteries.

The fourth level is called a "B" check. It is completed at least every 400 flying hours, and requires 80 man hours to accomplish. This inspection is, as indicated by the man hours, more substantial than the

earlier ones and includes, in addition to the previous work, the inspection and servicing of cabin compressors, engine accessories, control components, hydraulic components, and cockpit equipment, and an examination of certain structural members.

The fifth level is called a "C" check and is accomplished approximately every 2800 flight hours. During this inspection, virtually all operating components are inspected and serviced. All units scheduled for removal for overhaul are replaced and modifications to the aircraft which have been designated for accomplishment at that time will be made. This check requires approximately 1300 man hours to accomplish.

The "B" and "C" check are combined into "phase-checking" for wide body aircraft and accomplished at the "B" check interval. Also, there is a new check between the "B" and "C" check for standard body fleets. This check, called a "K" check, is accomplished once between "C" check. It is primarily lubrication of landing gear and flight controls that are required between "C" check.

The sixth level is called a "D" check. At this time the airplane, engine, or component is returned to the San Francisco maintenance base for the work. In the case of the airplane, the major inspection and refurbishment takes at least seven days to accomplish and requires about 13,000 man hours. During this work the entire interior of the airplane is refurbished, all the major structural items are inspected, all units requiring overhaul are removed, and the airplane is repainted and polished.

In order to accomplish this work United has located maintenance facilities at certain points across its system. Its primary maintenance facility is located at San Francisco. At this base it employs about 8,000 people and has 2.9 million square feet of hangar and shop space. The various buildings, hangars, etc., at our "main overhaul base" occupy 1,779,000 square feet of land. However, because some of these structures contain more than one floor, they yield a total of 2,871,000 square feet of usable floor space. This is believed to be the largest airline maintenance base in the free world. At this location United also maintains its

major supply of spare parts and supplies them to the rest of the system from this point.

The Maintenance Base performs "C" and "D" checks, phase checks, and most major modification work required. Chicago (O'Hare Airport) also has a facility that performs "C" checks and major modification work. United has located at this point a fairly major stockroom so as to have spare parts and spare engines available in order to expedite the required repairs and parts replacements.

The "B" checks are accomplished at a number of stations across the system - Cleveland, Honolulu, Washington, D.C., Seattle, Los Angeles, San Francisco, Chicago (O'Hare), Newark, and New York (LaGuardia). In addition to the above maintenance stations, United has provided mechanics and facilities to do routine servicing and to correct minor problems at other stations such as Atlanta, Baltimore, Boston, Buffalo, Denver, Washington (Dulles), New York (J.F. Kennedy), Minneapolis, Philadelphia, Pittsburgh, Portland, and Salt Lake City. Since there are some 92 stations on the system, the foregoing list does not encompass all of these stations.

No mechanics are assigned in the remaining stations and if any difficulties are encountered, the mechanic and necessary part must be sent to that station.

A substantial part of the communications which flow over the maintenance, engineering network, deals with problems of providing the passengers and air freight shippers with an aircraft that is from a maintenance standpoint, free of problems and consequently safe to fly, reliable, and clean. These communications can be as specific as a headquarters maintenance controller giving a line maintenance station employee instructions on how to repair a particular part of an aircraft or as general as the line maintenance station advising the headquarters control group that an aircraft having been repaired, is available for return to service.

In 1973 United Air Lines had an average of 362 airplanes making an average of 1535 daily departures to 118 cities. There is a potential maintenance problem with each of the flights involved. The nationwide communication network provided through ARINC as the single customer, permits United to focus all of its information and expertise from all over the United States on any individual problem of line

maintenance. Only with this immediate capability can the maintenance and repairs keep the United fleet air-worthy and permit it to keep its fixed schedules. By having immediate access to the various experts in any part of the country as well as being able to immediately dispatch parts necessary for repair purposes, United is able to assure its customers of maximum aircraft dependability and safety which, obviously, is based on the communications system itself. Unusual incidents, requiring immediate action and involving specific and complex corrective measures, bring into play our vital lifeline of communications. For example, early in 1974 the fatal crash of a DC-10 in France triggered a series of mandatory inspections and engineering actions without which we faced immediate grounding of our DC-10 fleet. Contacts were made with every element of maintenance and engineering, including training groups. Every station having DC-10 schedules and station alternates received special training in a matter of hours. Follow-up to this initial action on a day-to-day basis with the manufacturer, FAA, flight and constant field contact warded off grounding of the DC-10 fleet.

Maintenance

It has been the experience in United that the easy availability of low cost communications has encouraged those in charge of United to experiment and innovate with respect to how better to perform the assigned function. This, of course, has increased substantially the safety and efficiency of airline operations.

Overhaul

The system-wide communications capabilities also speed reports on aircraft overhaul status. Of tremendous significance from a safety standpoint is the fact that the system-wide communications capability enables United to have a report at 2:30 every morning covering each airplane, which report lists the total time since overhaul with respect to that aircraft, the total time since a service check, the total time to a maintenance check, and the total number of engine cycles.

Spare Parts

The availability of substantial and rapid communications as a requirement for proper maintenance

activity is equally applicable when the availability of spare parts and other replacement gear is considered. United has spare parts stored in 29 cities. All of these 29 cities have complete stockrooms which in turn back order or fill these requirements from San Francisco. These 29 stockrooms order over 43,000 parts per month via ARINC provided private circuitry from San Francisco. In addition to being able to order a particular part, it is necessary to have the capability to discuss the parts in question to insure that in case of ambiguity that the part to be ordered is the proper one for the particular aircraft.

Material Control and Information System

Because the management of our spare parts inventories and the resources necessary to repair them has been recognized as having a very significant cost impact, United has developed a comprehensive information system called MCIS or the Material Control and Information System. This system is totally dependent on information transmitted over communications circuits from our line stockrooms and maintenance base to our Unimatic computer site in United Air Lines' Headquarters. This information, entering MCIS, allows the system to control the quantities of spare parts being stocked at the various locations, determine

which parts should enter repair processes at the base, provide accurate inventory accounting and stock status information, collect reliability information on individual components, and monitor the accomplishment of engineering improvements on our aircraft. Another significant computer system known as AMIS or the Aircraft Maintenance Information System will concentrate on improving the efficiency and timeliness of the maintenance work assignment and accomplishment process at our line stations. This system will also use the Unimatic computer and its associated communications network.

Both systems, with their dependence on communications circuits, contribute significantly to safe, reliable, economical air transportation for the public.

Engineering

In addition to emergency communications if an aircraft is in trouble, a substantial amount of traffic relating directly to the operational capability of aircraft is generated by the Engineering Department, inputted to the UNIMATIC system, and distributed over the ARINC single customer circuitry.

Example 1

Modifications to an aircraft, changes in seating configuration, changes in operating equipment, etc.,

all affect the operating weight and the center of gravity of the aircraft. These changes can have a very serious impact on aircraft performance and on the flight crew's ability to control the aircraft. Thus it is necessary that all such information be expeditiously disseminated to all operating personnel. In fact, all weight and balance ledgers are now stored in the UNIMATIC system in order that all field stations will have the most current data readily available to them. Federal Aviation Regulations 25-23, et seq. contain specific requirements relative to these problems.

Example 2

Construction, airplane or vehicular accidents, or any number of other unforeseen circumstances can and do result in changes to usable runway length. Whenever this occurs, it is necessary that the allowable operating gross weights be recomputed for all fleets for the new usable runway length. These new weights must then be distributed via the quickest means to cognizant operating personnel. This is a very common occurrence and sometimes requires that personnel come in

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at night or on weekends to perform the necessary computations. It is also necessary at times, during the summer, to supply operating gross weight data for unexpected, last-minute, off line charter operations to support Forest Service fire fighting activities.

Example 3

It is oftentimes necessary to obtain more and/or specific aircraft or system information to aid in isolating or correcting an aircraft or system malfunction. Since the sheer size of our airline operation, of necessity, precludes frequent aircraft visits to the principal maintenance base, the UNIMATIC system is used as an effective vehicle to expedite troubleshooting and data acquisition.

Impact of Future Aircraft Maintenance Activities

Future aircraft maintenance activities, particularly line maintenance activities, will be progressively more "tailor-made" than in the past. Work packages will be varied at the task level to ensure that maintenance resources are applied to specific rather than average needs. These changes will tend to increase the volume of communications per man hour of work. Feedback of findings

for technical review and analysis will likewise increase.

Impact of Future Demand for Passenger and Cargo Service

Knowledgeable and responsible officials who handle the line maintenance program for United have concluded that absent the integrated, nationwide communications service provided through ARINC, the modern, efficient and reliable maintenance program which has been established at United Air Lines would be seriously impaired. The speed, size, and complexity of aircraft which will be delivered in the future, plus the required increase in fleet size and number of passengers and the amount of freight flown, will put a strain on the aircraft maintenance function. Even prior to the utilization of next generation aircraft, the mere growth factor of airline travel alone will put a strain upon the line maintenance system. For example, in 1976, it is forecast that United will operate 34.4 billion revenue passenger miles which is 18% greater than the 29.12 billion revenue passenger miles flown in 1973. Looking at the future, it is obvious that only data processing equipment has the capability to provide the speed, flexibility, capacity and degrees of sophistication required of a line maintenance communications system to ensure safe, reliable air transportation.

Relationship with the ARINC Air-Ground Network

ARINC's point-to-point services are merely part of ARINC's integrated nationwide aeronautical communications services, which also includes interline message switching in ESS and air-ground radio services. This integrated communications system promotes safety, inter alia, by permitting attention to be focused upon any particular crises aboard an aircraft. Thus, not only can the knowledgeable engineering and maintenance personnel of United Air Lines talk directly to the captain of the aircraft, but additionally, direct line communications to the manufacturer of the aircraft permits consultation with them as well as with United and the captain himself.

A dramatic illustration of how ARINC's point-to-point and air-ground communications directly affects the safety of passengers involved in a jet aircraft outbound from San Francisco. Upon preparing for a landing, the landing gear commenced a constant recycling and would not lock in the landing position. The captain of the aircraft immediately contacted the UAL dispatcher in San Francisco. This call was radioed from the aircraft, picked up by an ARINC VHF network station, and

automatically sent over ARINC's private line circuitry to the dispatcher. The dispatcher, again using ARINC's private line service, called the maintenance controller in Chicago who had immediate access to the blueprints and wiring of the aircraft. The controller immediately, again over ARINC private lines, contacted the United engineering department in San Francisco who had duplicate blueprints and wiring diagrams. Within minutes the entire expertise of the airline was directly available to the troubled aircraft.

As a result of the consultation the problem was isolated and the recycling stopped by instructing the flight engineer to disassemble a part of the wiring and splice two wires together. This locked the landing gear in a down position and permitted a safe landing. Without the immediate and country-wide communications capability the recycling could not have been stopped.

Other ARINC-Related Functions

The ARINC air-ground network also performs other functions. Mere size is no indication of a communication requirement. Nevertheless, it is interesting that during an average month United Air Lines' flights generated 150,000 radio contacts, all of which were

available over private line circuits to the dispatch centers. The utilization of the ARINC air-ground system provides the following communication categories:

- (1) Operational, flight progress reports, including fuel on board, to monitor safety of flights in operation. Planning: flight progress reports to provide the necessary flight information to the traveling public; advice to flights regarding navigation facilities, conditions along the flight path; flight diversion and alternative routing information; airplane and crew routing coordination; safety channel for pilots to report their problems and to receive assistance from ground organization.
- (2) Mechanical: advice to downline stations regarding minor mechanical troubles requiring adjustment upon arrival; mechanical problems requiring action while airborne based on conditions requiring alerting, dispatch, airport, fire, ambulance equipment and/or FAR equipment.

- (3) Passenger emergencies and service: illness or injury requiring immediate medical advice and/or doctor or ambulance on arrival; unruly passengers requiring crew to request legal advice and/or police, F.B.I., Customs to meet flight on arrival; information regarding the missed connections, revised schedule plans, etc.
- (4) Flight testing: communications between flight and ground crews to coordinate test program for post-overhaul engineering and maintenance check flights.

United has three Divisional Flight Dispatch Centers located at Dulles, O'Hare and San Francisco International Airports. Many flights are planned and originate from stations other than these dispatch centers. The communications network makes it possible for pilot-dispatcher flight planning discussion before and after flight. The pilot obtains the very latest information available in the dispatch center. The following are but a few of the items which affect flight planning and which enter into the pilot-dispatcher discussions:

weather, terminal and enroute; navigational facilities; airport and runway conditions; operating weights; payload figures; fuel requirements; military route and/or altitude blocks. Without such a communications network service, the immediate exchange and discussion of the information required would be impossible and result in lengthy delays and possible cancellations.

In a slightly different context, and on many occasions, the flight crew has called to report a passenger who has become seriously ill, injured or sometimes an expectant mother about to give birth. The need for a doctor and ambulance to meet the flight or give enroute medical advice is satisfied. On occasion the contact has resulted in an unscheduled stop with the possible saving of the passenger's life. Furthermore, should areas of turbulence appear, the dispatcher using phone patch can contact all flights planned through the turbulent area and arrange for changes in the flight plan to circumnavigate the problem.

Where a diversion of the aircraft may be required, ARINC's communications facility permits coordination between flight crew and the ground and maximum possible

preparation time which minimizes inconvenience to passengers. Thus, this communications capability permits the setting up of a safe and efficient operation in advance and keeps the operation flexible to the point where the best possible service can be provided to the customer. With sufficient time, it can be arranged for the passenger to have proper baggage handling and ground transportation from the diversion aircraft and disposition of mail and freight.

This bulk rate communications network available through ARINC performs an extremely valuable function where threats of bombing sabotage are directed toward the aircraft or a hijack is in progress. In this kind of situation every last second could be vital to the safety of many people.

Of extreme importance to safe and efficient operation is weather information. This information is received from the U.S. Weather Bureau, U.S. Air Force , and certain United Air Lines in-flight trips. Information consists of hourly weather information from hundreds of locations in the United system throughout North America. In addition, coded weather data is provided

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for the preparation of surface and upper air charts. Terminal area and upper air forecasts, severe weather warnings, including tornado warnings (and alerts), together with notices to airlines are also received and distributed over ARINC provided circuits.

Copies of weather maps are received on facsimile machines which are connected to ARINC provided circuits. The same service also provides information collected by weather satellites. Certain United Air Lines jet flights are designated as "honkers". They transmit to certain geographic locations a summary of weather conditions encountered in route. This information is received by the air-ground, ARINC network. This weather information is subsequently used in planning for all United Air Lines' flights. The dispatcher is continually monitoring the data in order to provide the latest weather information to in-flight crews. Information regarding severe weather, such as tornadoes, is passed from the central weather office to ground stations involved.

Reports

The FAA requires United to submit information on mechanical irregularities and more significant incidents within a 24-hour period. These irregularities average 400 per month and generate approximately 2000 messages. The information gathered in making these reports is combined with other statistical data kept by the engineering department of United and used to develop modifications and procedures to improve reliability and safety.

Airline Growth

The growth of United Air Lines for the eleven year period, 1963-1973, in terms of passenger and cargo traffic volumes is shown in the table on the following pages. Industry traffic volumes are also shown.

<u>Year</u>	<u>United Airlines</u>	<u>Trunk +All-Cargo Airlines</u>
	<u>System Operations</u>	<u>Domestic Scheduled Operations</u>
(a)	<u>Revenue Passenger Miles (Billions)</u>	
		<u>50-State</u>
1963	9.19	38.84
1964	10.16	44.71
1965	12.38	52.23
1966	13.39	60.90
1967	18.77	76.28
1968	22.18	87.55
1969	25.48	95.66
1970	25.28	95.90
1971	23.60	97.62
1972	26.95	107.93
1973	29.12	114.88
Average Annual Growth Rate		
1963 - 1973	12.2%	11.5%
(b)	<u>Total Cargo Ton Miles (Mail + Express + Freight - Millions)</u>	
1963	208.5	N/A
1964	251.4	1,158.5
1965	324.5	1,466.9
1966	428.3	1,846.0
1967	561.5	2,204.7
1968	669.4	2,656.8
1969	776.8	2,837.6
1970	756.9	2,814.3
1971	768.9	2,869.7
1972	804.6	3,115.6
1973	835.0	3,457.4
Average Annual Growth Rate		
1963 - 1973	14.9%	12.9%

Source: Civil Aeronautics Board - "Handbook of Airline Statistics."

"Air Carrier Traffic Statistics."

Schedule II

United Airlines
 1974-1975 Traffic Volumes (12/26/74)
1975-1980 Traffic Forecasts (6/28/74)

	<u>Revenue Passenger Miles (Billions)</u>	<u>Total Cargo Ton Miles (Millions)</u>
1974	29.4	807.3
1975	30.6	815.6
1976	34.4	945.3
1977	37.4	1044.9
1978	40.0	1054.1
1979	43.5	1125.8
1980	49.1	1201.5

Fleet Forecasts

	<u>Air Inventory</u>
1973	362
1975	381

EXOCA
 11/27/74

III. United Air Lines' Use of ARINC's Private Line Service

United Air Lines obtains virtually all of its private line and point-to-point circuit requirements from ARINC, which in turn obtains the necessary circuitry from AT&T, Western Union, and the specialized and domestic satellite common carriers. United Air Lines' use of these systems can be broken down into several categories, the use of which are as follows:

a. Unitel

The UNITEL System connects approximately 32 major cities served by United Air Lines into one major telephone network. This system is a two-way dial tandem tie-line network available to United personnel through desk-to-desk dialing. In addition, all other mainland cities and locations served by United may access UNITEL via off-premise extensions connected to the system at major cities such as San Francisco, Chicago, New York, Los Angeles, etc. The nationwide UNITEL network is composed of some 476 circuits obtained from ARINC. Each location on the network has specific access codes and restrictions assigned. UNITEL is also used for the transmission of low-speed data. This system is the basic administrative

voice communication network used for company administrative business, baggage tracing, ticket verification, operations, reservations and cargo service. It consists of approximately 185,500 miles of voice-grade circuits.

b. Systems Operations Control Network

The Systems Operations Control Network is a nationwide private line conference type telephone system obtained from ARINC. This system connects 41 major United cities including at most cities airport planning centers, dispatch offices, flight crew scheduling offices and maintenance offices. Signalling on the system is via two-digit dialing with non-privacy to permit priority traffic to interrupt non-priority traffic. This system is used to resolve immediate problems and enable personnel to make rapid decisions for various operational activities. Some specific calls made on the system include:

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- (1) Irregular Operations - Any problem within 24 hours of departure that would inconvenience or pose potential safety problems to the passengers.
- (2) Flight Information - Alert the operations planning base, dispatch centers and stations concerned of actual and potential delays in order to maintain posted schedules.
- (3) Aircraft routing problems - This system is in essence, three circuits which can be interconnected, emanating from the Executive Offices Operations Control Center in Elk Grove Township, Illinois to 40 other cities and utilizes 5,870 miles of voice grade circuitry.

c. Flight Dispatch System

The Flight Dispatch System is a nationwide private line conference type telephone system. This

system connects the three Divisional flight dispatch centers located at Dulles, O'Hare, and San Francisco International with the long range dispatch center also located at O'Hare and the Operations Control Center. It also connects the J.F. Kennedy, LaGuardia, and Newark airports with the Eastern Division Dispatch Center at Dulles airport. Signaling on this system is by two digit dialing non-privacy and key signalling. United Air Lines is able to use these circuits to communicate directly to aircraft in flight over several areas of the United States via ARINC's air-ground radio system.

This system is used to resolve immediate problems; and to enable personnel to make rapid decisions concerning various aircraft dispatching and routing problems. The calls placed on this system normally pertain to flights originating within the next three hours. Specific types of calls may include:

- (1) Aircraft routing problems that require coordination among several offices;
- (2) Dissemination of flight information regarding actual and potential delays;

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- (3) Contact with aircraft for flight status;
- (4) Forward any pertinent information about a flight;
- (5) Flight dispatch administrative calls;
- (6) Information necessary to schedule; and
- (7) Position of flight crew.

This system consists of three circuits, two of which may be interconnected serving seven cities requiring 2,690 miles of voice grade circuits.

d. Maintenance-Engineering Private Line Telephone System

The Maintenance-Engineering System is used to exchange information and enable personnel to resolve immediate maintenance problems which affect the operation of aircraft and ground equipment. Aircraft routing information is also exchanged over this system. The system consists of a nationwide conference-type private line telephone system. Signalling on the system is by two digit dialing. This system connects line maintenance offices and planning centers at major stations with the operations control center and the San Francisco maintenance base. The Maintenance

Engineering System relies heavily upon ARINC circuitry to meet the responsibilities of United Air Lines to provide safe, efficient, and adequate air transportation. This system requires 3,850 miles of voice grade circuits serving 16 cities across the nation.

e. Flight Crew Scheduling Private Line Telephone System

This System is provided to coordinate the scheduling and positioning of flight crews throughout the United system. The information exchanged on this system enables personnel to make rapid decisions and resolve immediate flight crew problems. Flight crew personnel hours worked during the month are relayed to executive offices on this system. This system consists of a nationwide private line conference-type telephone system connecting flight crew scheduling offices and system flight crew scheduling department of the executive office system planning center. Signalling on this system is via two digit dialing. This system requires some 3,780 miles of voice grade circuits serving 17 cities across the nation.

f. Administrative Briefing Private Line Telephone System

This system is used to provide daily Operations briefing, weekly Sales and Service briefings and bi-weekly Maintenance and Flight Operations briefings. Items discussed are system performance, irregularities, sales performance, market analysis, specific operational irregularities, personnel problems, and other administrative matters.

More importantly, the system is also used for communications involving emergency situations, such as extortion, hijacking, and accidents. This system consists of a nationwide private line conference type system composed of an east circuit, a west circuit and a circuit leg to the Chicago test room #1 of AT&T. All circuits can be interconnected. The system is used by all departments of United Air Lines. The system is controlled from the executive office emergency room and special circuits can be arranged at the AT&T test room to tie into the network should special circuits for emergencies be required on short notice. Signalling on this system is via two digit dialing. The system serves 12 cities with 3,600 miles of voice grade circuits.

g. Unimatic System

The United Air Lines Unimatic system is an advanced on-line real-time computer and medium speed communication network with a central computer complex located in the executive offices. Twenty-four medium speed Schedule C-2 data circuits connect the computer with the airports and city offices of United Air Lines. Local distribution to low volume locations is handled by 35 low speed circuits connecting to the medium speed network at the city concerned. Unimatic connects to other airlines via ARINC's ESS and to foreign cities via SITA. Unimatic also provides connections to United's Apollo reservations computer system in Denver.

The Unimatic System is used for flight information, aircraft maintenance condition, operational administrative message switching, material control and information, and many other information processing applications. The Unimatic System is the prime source of current information required by the operation personnel to coordinate the

minute-to-minute daily operations of United Air Lines and to assure safe and efficient operation with a minimum of inconvenience to passengers. The system is designed around three Univac type 1108 processors and requires approximately 31,000 circuit miles of private line facilities. These circuits connect 1300 Unimatic CRT computer terminals and 520 hard copy pagewriters.

h. The Apollo Reservations System

United Air Lines uses two IBM 360/195 processors located in the W.A. Patterson Building, Denver Technological Center, as its Apollo Reservations System. These computers have a capability of handling 180 messages per second. The primary application of this system is to supply reservations and ticketing information. Recent improvements in United's reservations system now permits this system to be used for credit card validation, automatic fare quotation to avoid errors, and automatic ticket printing.

The system connects with the Unimatic for the exchange of passenger and operations information system and, in addition, connects with 2,420 cathode-ray agent sets and 254 printers. The system utilizes 32 medium speed circuits from 10 major regional reservations centers. From these 10 locations, 37 tributary circuits operating at 2,400 bps feed the lower volume locations about the country. Total circuit mileage is approximately 48,00 miles.

i. Foreign Exchange Telephone Service

Through the use of Foreign Exchange Service in single customer ARINC circuitry, United has consolidated its system reservations function into 12 regional offices in the continental United States serving approximately 116 major cities and many smaller cities. This enables United to provide full time (24 hour/day) reservations service to the public not only in major cities, but in smaller cities as well. These smaller cities would normally be limited to service during business hours only or, in some case, have no service at all. Not only are service hours extended, but the service is

vastly improved due to more efficient operation of the consolidated office and the assignment of more qualified personnel to that function. In addition, nine Foreign Exchange circuits are used to connect cities with the executive offices of United Air Lines for administrative and emergency business. Foreign Exchange circuit mileage in use for this purpose projected to December 1975 will be 200,000 airline voice channel miles.

Future Operations

Looking to the future, we can be assured that within a few years many improvements will be made in the movement of passengers and freight by air. Technological advances will work to the direct benefit of passengers and shippers. A glimpse into the future would show a number of applications using these technological advances. Some examples are:

1. Customer Self Ticketing Machines

This is an expanded use of the current autogenerated ticketing machine which prints tickets at airport and city offices upon request by an agent to a computer. In the new application, the customer would insert a credit card

into the machine which would automatically request a ticket from the computer. Before printing the ticket, the computer would check the credit card validity.

The computer would also maintain a record of all charges against the credit card for billing purposes.

2. Bag Tag Printer

This application will autogenerate a baggage tag when a passenger checks in. The tag will contain encoded passenger Name Record data and the Computerized Passenger Name Record system will be updated to contain the bag tag number. This will effect a more efficient system of matching lost baggage with the customer.

3. Automated Weight and Balance

This application improves the utilization of aircraft space by assuring accurate weight and balance computations. An accurately balanced aircraft results in greater payloads, a reduction in fuel consumption and a more optimum center of gravity. This improves flight performance and provides a higher margin of safety.

4. Expansion of Automatic Passenger Check-In

Currently, ACI is in operation at a limited number of stations. In the future this service will be expanded to include all major stations on United's system, as well as many of the smaller stations.

5. Cargo Space Control System

This includes the equivalent of a Passenger Name Record system for cargo, with full reservations capability. It allows for increased service to the customer by allocating space for his freight on the flight of his choice. It also allows for greater flexibility in the handling of freight and will provide more information to both the shipper and consignee on the status of a shipment.

6. Airport Flifo

This system links the existing company flight information system to the information displays at airports. It provides the passenger with more timely information as to the status (ETD, ETA, Gate, etc.) of his flight.

7. Sharing Applications With Other Airlines

United Air Lines has spent considerable time, effort, and money in the development of sophisticated data processing applications. Smaller carriers may find it impossible to justify the initial outlay for such highly specialized systems. With the experience that United has gained, it is in a position to provide computer services to other carriers at a reasonable rate.

8. Air-Ground-Air Data Link

This capability enables the transfer of data between the air and ground at much faster rates than voice communication, thus freeing up a significant portion of currently assigned radio frequency spectrum.

9. Area Navigation Data Base Collection and Dissemination

The Area Navigation concept of air traffic control is estimated to be operational in the 1980's. A requirement will exist for the collection of all amendments and changes to the Area Navigation facilities on a regular basis. This information will then have to be disseminated by land line communication for inclusion in each aircraft on the effective time and date. These records are updated approximately once a month.

10. ARTC Computer to Computer Flight Plan Filing

As additional automation occurs within the FAA's Air Route Traffic Control (ARTC), the requirement for direct filing of carrier flight plans with ARTC centers will increase. This capability will provide faster, more accurate flight plan filing capability than currently exists.

IV. The Dimensions of ARINC Single Customer

In 1973, our ARINC line haul costs were approximately \$2,998,600. Based on actual billing through November 1974, and considering our plans for the balance of the year, our PLIN costs for the year will be approximately \$3,059,000. Based on foreseeable requirements, we anticipate a need for an additional 200,000 airline unit miles to accommodate our overall service requirements through 1975. This represents an increase of approximately 3.5% over our 1973 requirements.

In determining when to use additional ARINC circuitry, we first determine that the need for additional communications is justified by safety requirements, a government mandate, an economic benefit or an expansion or improvement in an existing or proposed service. We determine if voice, data or written record communications is required. The traffic volumes and number of locations among which communications will take place are ascertained. Using this process, the most economical method of communications is determined. The methods we consider are mail, messenger, exchange service, direct private line service (i.e., written record and voice), and common carrier

services available through ARINC or from specialized common carriers. It is clear that the costs of additional communications service in other than safety situations have a direct impact on whether the additional service will be added. Virtually all private line service subscribed to by United is obtained from ARINC under the single customer tariff.

Insofar as United Air Lines is concerned, the single customer concept has eliminated the following cumbersome procedures which were necessary under shared Telpak:

a. Each airline analyzed its current and shortrange needs for communications channels between cities it serves directly and to cities that are within its general marketing area. Requirements include all categories of services: Telephone, Teletype, High-speed, Medium-speed, and Low-speed Data, Electronic writer, Facsimile, TV, Signalling, Metering, etc.

b. Airline communications representatives met periodically at industry conferences. Here, the needs of all airlines were consolidated to

determine overall industry requirements between each pair of cities of concern to any one or more airlines.

c. The optimum size Telpak offering was then selected to meet industry requirements for each pair of cities.

d. ARINC acted as industry coordinator and served as the "agent". ARINC issued an order to the appropriate Bell or Independent Telephone Company for all channels required by the industry between each pair of cities. ARINC would indicate on its order the specific number of channels to be allocated to each airline.

e. As an expedient, each airline notified the respective telephone company which channels it wished to implement, indicating therein all characteristic details including purposes and the types of channel desired, i.e., teletype, telephone, data, etc.

f. Concurrent with notification, the airline issued an order directly to the telephone company for any associated equipment necessary for each

specific channel, such as data subsets, equalizing equipment, key boxes, handsets, switchboard or other type terminations.

g. The telephone company billed each airline separately for all channels allocated to it by ARINC plus the associated equipment required for each channel implementation.

h. ARINC also performed a clearing house function. Channels not required by an airline were listed with the agency. Airlines which required additional channels would list these requirements with ARINC. ARINC would periodically issue orders to the telephone company, as appropriate, revising allocations.

ARINC's current role as customer has greatly simplified the process of obtaining service. Now United just orders the circuits it requires from ARINC and receives a single bill from ARINC for line haul costs. ARINC also forwards appropriate bills for terminals and equipment.

Before Telpak was offered in 1961, United's communications systems and services, although quite extensive as

compared with other industries, were limited in numbers of circuits provided and cities served. This was due in part to the high cost of providing circuits to cover the large geographical area served by the United route structure. It was not economically feasible to install discrete systems to meet the needs of all departments having requirements for such service. Consequently, United's communications systems prior to 1961 were shared by various departments and administrations. Because of the nature of airline operations, severe peak-load demands were frequently placed on all systems. It then became necessary to establish priorities to accommodate such loads. Under such conditions, communications related to safety are always assigned the highest priority.

Lower priority communications then became backlogged, frequently to the extent that they had to be handled via regular long distance telephone or commercial telegram services at substantially higher cost. These alternatives are not desirable since they do not meet United's speed of service standards. It should also be noted that prior to 1961 United's use of Foreign Exchange telephone services was very limited. It was not economically

feasible, in most cases, to provide Foreign Exchange facilities to gain the advantages and improved efficiencies of consolidated reservations offices to perform passenger reservations functions.

Since the introduction of Telpak, first with sharing and later under the single customer concept, there has been a substantial increase in use of communications services commensurate with air travel volumes, service and safety requirements by United.

<u>Year</u>	<u>Combined Voice/Data/Teletype Airline Unit/Miles</u>
1961	650,000/mo.
1962	742,900
1963	990,000
1964	1,115,000
1965	1,400,000
1966	2,402,000
1967	3,767,000
1968	5,600,000
1969	5,900,000
1970	6,270,000
1971	5,780,000
1972	5,940,000
1973	5,610,000
1974	5,657,000

The availability of a bulk communications tariff, first with shared use and then under the single customer concept has unquestionably given impetus to United and other airlines to increase communications usage. The

rapid technological development of on-line real-time data processing systems can also be attributed in large part to availability of bulk communications at reasonable cost. The overall cost of many such systems already designed and in the process of implementation would not have been assumed absent a shared use or joint or cooperative bulk rate tariff. United's Unimatic and Apollo Systems are typical examples.

The shared use and single customer bulk rate tariff have made it economically feasible to consolidate reservations offices and substantially improve service to airlines' customers. The degree to which such consolidations have been effected has been governed by individual airline judgment with respect to continued availability of a bulk rate tariff. The existence of a shared use or single customer bulk rate tariff has also contributed materially to expansion of private line voice networks in support of both operational and administrative activities of the airlines.

United estimates the monthly cost of the PLIN concept at approximately \$260,000 per month. If the single

customer tariff were eliminated, the estimated monthly cost of United for private line service would be approximately \$424,000 per month, assuming the same volume of usage. Thus, under the present rates the elimination of the single customer provisions would represent a 63% increase in private line costs, assuming the same level of usage.

STATEMENT OF ROBERT D. DeLOACH
OF EASTERN AIR LINES, INC.

I. Identification of Witness

My name is Robert D. DeLoach and I am presently Director - Communications of Eastern Air Lines, with headquarters at Miami, Florida. In that position, it is my responsibility to provide communications support and services to all elements of the Company. This includes telephone, teletype, radio, data, facsimile, and video communications services.

I have been associated with the airline industry for the past seven years, all of which has been with Eastern Air Lines. My total experience with Eastern has been in the field of communications. I have been associated with the communications industry in varying degrees for more than twenty years. During this time I worked for Western Electric, Southern Bell Telephone and Telegraph Company, served on the faculty of the Engineering College at the University of Florida for four years, and worked for General Telephone and Electronics before joining Eastern Air Lines. I attended the University of

Florida, where I received B.S. and M.S. degrees in Engineering, and am a registered professional engineer.

Eastern Air Lines, Inc. (Eastern) is a member of the Air Transport Association of America (ATA) and a stockholder of Aeronautical Radio, Inc. (ARINC). I am a member of the Board of Directors of Aeronautical Radio, Inc., ARINC Research Corporation, and International Aeradio (Caribbean) Ltd.

II. Organization and Functions of Eastern Air Lines

Eastern Air Lines is a trunk air carrier of passengers, cargo and mail. It serves almost every major city east of the Mississippi as well as many smaller cities in that area, plus Los Angeles, Seattle, and Portland on the Pacific Coast, Corpus Christi, Dallas Fort Worth, Houston, and San Antonio in Texas, and Omaha, Nebraska. In addition, it serves Toronto, Montreal, and Ottawa in Canada, Bermuda, the Bahamas, Mexico, Puerto Rico, and other Caribbean islands extending south to the coast of Venezuela.

Eastern competes with numerous other airlines on its routes, including trunk carriers, local service carriers, all-cargo carriers and supplemental carriers.

Practically every major market which it serves has competitive air service. The routes which we serve and the fares and rates which we charge are regulated by the Civil Aeronautics Board. With respect to operational and safety matters, we are regulated by the Federal Aviation Administration.

Eastern has executive offices in New York and Miami, and our main operating base is also in Miami. We have facilities at a total of 92 airports: at 68 airports within the United States and at 24 overseas or foreign airports. In addition, we have facilities of various types in 19 communities, 12 of which are within the United States and 7 of which are overseas or in foreign countries.

In the United States we have 8 consolidated reservations offices serving 139 cities by local or Foreign Exchange service obtained from ARINC. Foreign Exchange service refers to the connection of a telephone or other device to a number in the telephone company exchange of another city, by means of a private channel. This allows a customer in Washington, D.C., for example, to dial a local Washington number and talk to an Eastern reservations agent in Charlotte, North Carolina. We have sales

and ticket offices in 146 cities in the continental United States and 41 overseas or foreign cities.

We have an operations office at each airport -- 68 within the United States and 24 at overseas or foreign points. In addition, we have 17 maintenance facilities within the United States and 4 at overseas or foreign locations. Operational control, non-scheduled maintenance, and aircraft routing are centralized in the System Operations Center at Miami. Reservations activity is centralized in the 8 area reservations offices, all of which are in turn linked to our computer system at Miami, Florida. All data processing and computerized information services are centralized at either Charlotte or at Miami.

Eastern, as any airline is, by nature, "decentralized." The task of our management is to assure economical operation with sufficient centralization to permit safe and efficient decision-making and control. The increasing centralization of each phase of our operation, accompanied by increasing safety and efficiency, is, to a great extent, made possible by PLIN* circuitry, through ARINC as the single customer.

* ARINC's "Private Line Intercity Network" ordered by ARINC from various common carriers, primarily AT&T's TELPAK at present.

III. Communications Operations of the Airlines
Through ARINC

In October, 1974, Eastern obtained approximately 6,400,000 unit miles of private line circuits through ARINC. Of this total, 530,000 circuit miles are in voice grade channels and 8,400 circuits miles are teletype grade channels. Our total monthly PLIN cost for October, 1974, was \$487,956.00. This figure includes both channel costs and termination charges.

Through ARINC, Eastern is part of the integrated, aeronautical communications network. ARINC provides Eastern and all other air carriers, with efficient and cost-effective management of this network running to, from, within, and between air carriers. ARINC's PLIN and ESS (electronic switching) services are essential to the safe, economic, and efficient operation of Eastern Air Lines.

Some of the present functions now served by communications in the operations of Eastern Air Lines which utilize ARINC's private line circuitry include the following:

Technical Services

Technical services, as a unit of Maintenance, resolves the unscheduled maintenance problems that occur in day-to-day operations. The availability of the dial tieline system and the Private Line Telephone (PLF) system, which use channels through ARINC, are essential factors in the smooth and efficient operation of this department.

A recent survey showed that there are approximately 37,000 telephone and PLF calls to and from Technical Services each month. Telephone services pertained to information concerning delayed or out-of-service aircraft; system or routing control; calls from departments requesting information, i.e., Production, Planning, and Inspection; contacting maintenance stations for information; informing area director of problems; and the monitoring of Private Line Teletype messages (PLT) to and from Technical Control. The PLF line is the communication facility used for the Daily Maintenance Conferences. During these daily conferences, which last from 30 to 45 minutes, many immediate answers to maintenance problems are determined.

Meteorology

A second major use of rapid communications is the Central Meteorological office. Through the use of PLIN lines, the staff is able to render advice to all of Eastern's flights. This facility is used whenever the captain of a flight has questions which must be answered immediately about weather conditions, or whenever unexpected flight conditions arise, and a call is made to the meteorologist.

The Central Meteorological office, through the use of a facsimile transmitter and PLIN facility, is able to transmit weather maps, flight cross sections, hazardous warning areas, plus other like information in pictorial form to each of nine receiving installations, which are located coast-to-coast throughout the Eastern systems. Furthermore, through the use of ARINC PLIN, the Meteorological office is connected to every station in Eastern's continental system, and oral briefings to flight crews are made frequently. This is aided by the use of the system-wide teletype network to distribute weather forecasts, warnings of particularly severe weather and other special information. In addition, the Meteorological staff provides the weather input for computer flight

ns which are, in turn, distributed over the tele-type system.

A third major department totally dependent on rapid and comprehensive communications is System Control, whose primary functions are those of Dispatch and Planning.

Dispatch

By Federal regulation, Dispatch is charged with responsibility (shared with the captain) for the safe operation of every Eastern flight. With today's jets covering ten miles a minute, it is obvious that information on all facets of each flight's operation -- time off, position reports, enroute weather, changes in airport conditions, etc. -- must flow freely and quickly to and from our Dispatch offices.

In order to have the necessary communication capabilities, the dispatcher utilizes the following facilities which with few exceptions, are provided through ARINC:

1. The Eastern dial tieline system for:
 - a. Exchanging information with ground personnel at each of the airports in the United States and Canada served by Eastern.

- b. Consultation with the captain of a flight prior to his departure.
 - c. Discussing short and long-range weather forecasts with our Meteorology department.
 - d. Contacting various governmental agencies (FAA towers, airport authorities, Air Route Traffic Control centers, etc.) in potential or existing inflight emergencies.
 - e. Obtaining information from our 494 computer in Charlotte, using touchtone.
2. The Eastern central company data communications (CODACOM) system for:
- a. Issuing individual authorization for each and every flight on our system.
 - b. Receiving periodic weather forecasts (surface and aloft) from our Meteorology department.
 - c. Distributing flight advisory messages, as required, to all those needing them.
 - d. Advising station personnel of heavier-than-normal fuel requirements.

- e. Confirming instructions and information previously issued or received via telephone.
 - f. Sending and receiving many other types of messages which are not urgent enough to require a telephone call.
- 3. Private telephone lines between our Dispatch office and various stations for Dispatcher-Captain consultation when the flights are in the air.
 - 4. Private lines between each Dispatch office and various stations, so that:
 - a. The dispatcher may advise the planner of factors which will, or may, require adjustments to our operational plan.
 - b. The planner can inform the dispatcher of necessary deviations from normal operations.
 - 5. An automated Flight Watch Display system, permitting each dispatcher to keep informed on the progress of every flight under his control by visually scanning the display. This Display gives the dispatcher a summary

of information needed on each flight for operational control.

Our CODACOM system is used to feed information the 494 computer in Charlotte. The computer processes the information and redistributes the information to:

- a. Ground stations, via data communications circuits.
- b. The controlling Dispatcher(s), via data communications circuits.

Other special circuits are used to provide stations from Seattle to New York to Miami the capability of rapid input of radio messages from flights in the air to the 494 computer. The computer, in turn, processes and distributes the information as above.

Planning

The Miami Planning Center, established to increase operational efficiency by obtaining maximum utilization from available aircraft and crews, under existing and anticipated weather and airport field conditions, utilizes "management by exception". Since good decisions

are possible only when they are based on accurate and timely information, the Planning Center must also have rapid and easy-to-use communications facilities.

Principally, these facilities consist of:

1. Full-period telephone circuits between the Planning Center and various airports, for:
 - a. The stations to advise the Planning Center of any difficulties with aircraft or crews; changes in terminal weather, airport conditions, traffic delays, and any other pertinent non-routine events.
 - b. The Planning Center to concur with extended departure delays (no major station can establish a flight delay of thirty minutes or more without the concurrence of the appropriate planner), coordinate abnormal operations with the affected stations, and request any other information needed.
2. A full-period telephone line between the Planning Center, Dispatch, and our Meteorology offices. In addition to the routine

weather briefings, special consultations are held as needed to discuss major snowstorms, hurricane and unexpected widespread weather developments.

This telephone circuit also has drops in all crew scheduling offices for consultation between these offices and the Miami Planning Center.

3. The dial tieline system, for:
 - a. Discussing possible protection for our passengers on delayed or cancelled flights.
 - b. Consulting with any Eastern station on existing or possible operational problems.
 - c. Contacting those individuals in Eastern who have, or can obtain, information needed for formulating an efficient operating plan.
4. The Central CODACOM system, for:
 - a. Transmitting written instructions for executing an operational plan.
 - b. Reciving information of all types -- field condition reports, crew status messages, etc.

- c. Issuing flight information messages to the field. These messages may also be sent to the 494 computer, where they automatically update Dispatch Flight Watch Display records and flight information displays used by our Reservations Agents.

Before TELPAK was offered (first with sharing and later through the single customer concept), Eastern used only a few private line telephone grade circuits. Inter-city communications were carried on, in general, by teletype, supplemented by the use of the message toll service when absolutely necessary. The cost of inter-city circuits and facilities was so high that it was more economical, except where flight safety was directly involved, to forego the increased operating efficiency and service to the public which bulk rate communications has made available to Eastern and other airlines.

As a result of first shared TELPAK, and later ARINC's PLIN service, ARINC and the airlines are able to consolidate many widespread functions such as Reservations, Computer Systems, Air-Ground Radio Networks, Planning and Dispatch Centers. At the same time, they are able to employ

daily in-house conferences in Maintenance, Operations, Meteorology, and Dispatch to provide safer and better service to the public. These results have necessitated the use of additional equipment leased from the telephone industry, such as automatic call distributor systems, switchboards, modems, and similar types of telecommunications equipment. An example of current planning in this area, involving a service whose importance is most apparent, is the use of communications lines to relay engine and other aircraft operating system information from an airborne aircraft into the computer and thence to the appropriate maintenance facility. The new system, by allowing Eastern to predict in advance which portion of a particular system may need inspection and/or immediate maintenance, prevents the discovery on ground inspection at some minor station that a part which is kept only at a major maintenance facility must be replaced before the aircraft can be returned to service. The relevant costs which must be measured in determining whether or not to use such a system are the cost, per aircraft and per minute, of unscheduled "down time" in a year, as against the cost of the Eastern-owned hardware, and the leased communications channels and facilities, in the same

yearly period. Through ARINC's PLIN, such a system is attractive enough to deserve extensive consideration by specialists in each of the areas of technology involved. Without PLIN, such a system might never have been proposed. And, I might add, it would seem that the adoption of such a system would result in fewer of the types of mechanical problem which, while having no direct effect on the safety of the flight, cause delays and resultant passenger discomfort.

Another example involves recent experiments with the use of a direct line between one of our central computers and our catering companies' offices at major Eastern cities. The computer determines the number of reservations on each flight, estimates the additional persons who will board that flight, based on the computer's past experience with flights of that particular class (this would vary with the city-pair involved, with time of day, day of the week, etc.) and wires an order to the caterer for a particular number of first-class and coach meals. The net result is that Eastern provides better service and saves thousands of dollars formerly expended for unused food. If the integrated ARINC point-to-point communications network

were not available to support this service, it may be that the cost of this service would exceed the potential savings. We would, in that case, re-examine our needs.

In summary, the availability of bulk rate communications through ARINC has resulted in a greatly expanded use of communications facilities. Without such capability, the service improvements in Eastern's operations previously mentioned would not have been made initially and may be uneconomical to continue.

IV. History of Growth of Eastern Airlines

One of the standard indices of an airline's size is the number of revenue ton miles it produces in a given period. In 1961, Eastern produced 513,323,000. In 1966, we produced 889,793,000. We were, at the end of 1973, about 294% of our 1961 size. More recent figures remain encouraging: for the twelve months ending December 31, 1973, Eastern produced 2,025,893,000 revenue ton miles. This figure, compared to 1972 shows an annual increase of approximately 2.8%

Eastern enplaned in excess of 26,000,000 passengers in the twelve months ending December, 1973. Our Economic Planning Department projects that boardings for

the year 1974 will approximate 27,000,000, and by 1976 we anticipate boarding between 28,000,000 and 29,000,000 passengers annually. In making this projection, our Planning Department considered: demographic and life-cycle factors of the population; trends in seat mile costs and their effect on fares; the position of the Eastern market in the country's overall growth picture; regional economic trends; and Eastern's competitive position in the markets we serve.

V. Reliance by Eastern Airlines Upon Communications

The Passenger Name Record Computer System represents only one illustrative major project in the use of communications by Eastern. It is an integrated realtime computer oriented reservations system, encompassing all major reservations functions, certain ticketing applications, passenger boarding control functions, and, as a by-product, provides a variety of reports and analyses as to market strength, source of business, schedule effectiveness, booking trends, etc.

Associated intercity data communications services are required to connect approximately 3,500 cathode ray tube communications terminal devices. These are located in consolidated reservations offices, system control, operations

offices, ticket counters, etc., and communicate with computer sites in Miami and Charlotte in requiring 9,600 bits per second full duplex lines between Miami and reservation offices in Charlotte, Chicago, Woodbridge, and San Juan; 4,800 bits per second full duplex lines between Miami and reservation offices in Atlanta and Tampa; and 2,400 bits per second full duplex lines to interface between the computer in Miami and the Univac 494 computer in Charlotte.

The expansion in Eastern's use of communications common carrier services which has occurred since 1961 is a direct result of the availability of TELPAK service on a joint or cooperative use basis. Without bulk communications, it would not have been economically possible to consolidate our reservations system into only eight offices. Eastern might also have adopted some alternative to our centralized Miami planning centers, and would have had to do without many of the intra-company and inter-company communications systems which we now use.

When private microwave systems were authorized by the Commission, Eastern as a part of the industry, gave

consideration to the establishment of a private airlines communications system. In 1961, Eastern, through ATA and ARINC, participated in the evaluation of a private microwave system. We were convinced, however, that the TELPAK offering which AT&T then made to the public would satisfy our communications needs more economically. Such a decision must be made on a long-term basis; one cannot reconfigure an industry communications system in a matter of a year or so. We were convinced that TELPAK, because of its rate levels, would continue to be competitive with private microwave and other alternatives.

From a competitive viewpoint within the airline industry, if a bulk communications PLIN were eliminated among the present airline users, only the large airlines could economically justify use of TELPAK offerings. Should such use be economically possible only in the case of one airline, this would place other airlines at a competitive disadvantage. This disadvantage, I might add, would affect the smaller air carriers most and would increase their difficulties in competing with larger airlines.

Our present plans for expansion in the use of communications are based upon the continuation of ARINC's PLIN services. If this were to change, our plans for new communications-using systems would have to be completely re-evaluated. Even our present operational systems will have to be looked into, if any communications cost increases become effective, to determine which systems can be eliminated or reduced in scope. If PLIN service through ARINC were eliminated, and if the airlines did not turn to some alternative competitive system such as private microwave, specialized common carrier service, domestic satellite service, or some combination thereof, this would in all probability necessitate the operation of many new and smaller reservations offices to serve smaller geographical areas. This would require the investment of several millions of dollars in new construction and the loss of much of our investment in existing facilities. The loss of bulk communications through ARINC would also require the re-examination, as I have indicated earlier, of many new proposed automated centralized systems which will require the use of additional voice and data transmission channels. We would completely re-evaluate our current communications services,

and would consider eliminating or curtailing many of the inter-city services which have so effectively contributed to our operating efficiency and economy.

The major shift in communication costs which would result from eliminating bulk communications through ARINC would, however, obviously create for Eastern a large reduction in our over-all use of communications common carrier services and facilities. Other means of accomplishing much of our business would have to be found. An especially unfortunate aspect of this is that any reduction in the availability of telecommunications circuits to our operating personnel can have a real, though intangible effect on our ability to provide the most efficient service to the travelling public. Through ARINC, we have been recomputing current costs of a private microwave system if bulk communications were to be eliminated and comparing the cost of such a system to communications common carrier rates. We have also been studying the relative and comparative costs from use of the services of specialized common carriers, the services of domestic satellite carriers, or some combination of the three alternatives.

We in the airline industry are extensively regulated by the Civil Aeronautics Board, and are charged with the duty of providing air transportation to the public at a reasonable cost. The ultimate burden of any increases in our costs will therefore be borne by the public using our services. But we do not wish to increase our rates any more than absolutely necessary. The whole history of our industry has been one of enormous growth because of our ability to lower our rates, in constant dollars, rather than increase them. I would think Eastern's management would be willing, if necessary, to subsidize some increase in present communications operating costs in order to provide an airline-owned communications system, such as the proposed ARINC microwave system, which, as our traffic continues to grow and economies of scale can therefore be realized, may ultimately provide us with a cheaper service in the long run.

In other words, the per message cost of a microwave system may be significantly reduced in ten years. We certainly would not wish to spend additional tens of

millions of dollars purchasing computers, whose use requires two or three years to plan, and then see our communications rates increase to the point that our investment becomes obsolete even before it is operational.

FCC Docket No. 20097
Airlines Exhibit No. 5

STATEMENT OF ROBERT F. ROLAND
OF ALLEGHENY AIRLINES, INC.

My name is Robert F. Roland, and I am Assistant Vice President-Finance of Allegheny Airlines, Inc. I was previously employed by United Air Lines as Manager of Computer Services. I have been with Allegheny Airlines for thirteen years, serving first as Director of Computer Services and then Assistant Vice President of Data Services, where for six years I had direct responsibility for all of the data communications and telecommunications for Allegheny Airlines.

Allegheny Airlines is the largest regional scheduled air carrier, and the sixth largest passenger carrying airline, in the United States. It serves the region between Montreal and Norfolk and from Minneapolis to Memphis, and is the only regional carrier which does not require a Federal subsidy.

Bulk private line communications service furnished by the Private Line Intercity Network (PLIN) of Aeronautical Radio, Inc. (ARINC) is an essential element of the communications network of Allegheny Airlines.

Customer Services, airline operations and administrative communications require a fast, efficient, reliable, and low-cost service such as that provided by ARINC's PLIN circuits. The single customer concept effectively allows the airline industry the opportunity to optimize the use of such services, minimize the inventory of circuitry, and decrease expanded capital requirements of the common carriers that would otherwise be required to support services individually to each airline. Communications can be likened to fuel; without either, the airline operation would come to a complete halt. Increased cost of these two vital ingredients naturally jeopardizes the earnings and economic stability of the airline industry and usually results in increased fare filings before the Civil Aeronautics Board. Allegheny's estimated 1974 PLIN cost is \$1,000,000. The Communications Department of Allegheny Airlines reviews each request for communication services to determine if traffic volumes warrant the service, if other alternatives are available, and if economic justification is available. Despite this detailed review of each request, Allegheny's PLIN circuits requirements have grown at an average annual rate of 11% for the past five years.

In all major markets and in most secondary markets, airline companies fly competitive service. It makes money sense for the airline industry and for the common carrier to provide and use bulk services in the marketplace. These results are passed on to the public indirectly through the fare structure of the industry.

I would now like to address three major areas of use of private line communications furnished by ARINC within Allegheny Airlines, namely, Customer Services, Airline Operations, and Administrative Uses.

Customer Services

Allegheny provides toll-free dialing services from each of the cities to which it operates and to many adjacent communities for reservations, fare information, flight information, and information relevant to cities served by the airline. In many instances, this system is the only link a community has to the air transportation network of the world. Reservations are thus accepted and made for all domestic and international airlines over the ARINC provided airline communications system. These services are available 24 hours each day and seven days each week.

Each airport office and each city ticket office has a PLIN data link to our reservations computer system to make reservations automatically, confirm reservations, change reservations, provide flight information and to coordinate meal service planning. This same data link from PLIN is interconnected at all major airports to a high speed "on demand" ticket printer to decrease passenger time and minimize the impact of queuing passengers awaiting assistance. Presently, this communications PLIN-oriented computer system handles 950,000 transactions on a normal business day.

Airline Operations

Keeping track of records for a fleet of 104 constantly-moving aircraft, 40,000 passengers each day, hundreds of thousands of pieces of airmail, cargo and airfreight, crew eligibility, aircraft maintenance problems, thousands of time-controlled components on each aircraft, weather, field conditions, crew scheduling, aircraft scheduling, service scheduling, aircraft fuel load, weight and balance distribution for each 1,200

departures each business day requires a minute-to-minute finely-tuned communications system. All of these normal operational daily routines are supported by statistical data for internal use and also for contribution to the two primary Governmental regulatory agencies; the Civil Aeronautics Board and the Federal Aviation Administration.

The communication system's primary backbone is the private line service available through ARINC under the "single customer concept". Each aircraft, as it wings its way through the sky, is not only monitored for its position and advised of weather conditions, but also requires close coordination for assistance should any malfunction develop. Records are kept upon arrival to accumulate hours and landings for each of the thousands of individual components on board to assure compliance with mandatory service checks, replacement parts, tear-downs and build-ups necessary to make the aircraft the soundest and safest machine in the world. Crews are checked for eligibility on aircraft types and airports, as well as for hours of flying in any twenty-four hour period. Standby or reserve crews must be strategically placed and available

by various equipment type should eligibility be questioned, or if a call is received indicating sickness. Cargo must be removed at its destination, requiring the placement and availability of equipment, elderly and convalescent passengers must have ambulatory equipment in place to assure efficiency of operation and minimize delays inconvenient to the traveling public. Weather advisory warnings are dispatched to flights in progress, as well as to each down line station. As each aircraft departs in any direction for its destination, alternate airports must be chosen should weather or other conditions prevail. Crews and aircraft must be scheduled and re-scheduled from the time day begins until it ends some 24 hours later.

Remedial maintenance requiring proper tools, components, and licensed personnel must be properly placed or available for dispatch to any point on the system. Regularly scheduled maintenance for servicing and major overhauls must be monitored to assure complete compliance with internal and regulatory requirements. Each aircraft departure must be individually audited for proper weight and balance, take-off and landing weights, much depending

upon down line airport restrictions and fuel burn-off en route.

Communications is the "lifeblood" of our operational system, minutes become precious when the public is served, thus we must be assured that our messages always flow fast and smoothly.

Administrative Uses

Procedural changes to aircraft maintenance or customer servicing must be communicated rapidly and precisely in written form to assure proper compliance by all personnel. All aircraft departures require the transmission of two departure messages to system flight control and down line stations. With aircraft flying 600 MPH and our average flight leg being 229 miles, an aircraft can reach its destination within 35 minutes of its lift-off. Lost and Found information must be transmitted to central control. Data collection and data dissemination in printed format is distributed via our high-speed communication network anywhere on the Allegheny system within one minute of its origin. All messages are received by the communications computer system and routed to their proper addresses. Rapid communication is required to permit

the administrative functions the time required to handle our relatively short flights and short aircraft turn-around time.

A complete communications system is utilized to support our aircraft maintenance division. Daily briefings are conducted via telecon hookup, tying our base maintenance staff with each of our eight line maintenance locations. Problems are reviewed and, in most cases, resolved immediately.

A tandem dial telephone system is installed, giving access to all 70 airport locations from any office on the Allegheny system. A two-digit dial system providing immediate access from our flight dispatch offices to all major airport locations is used to resolve dispatch and routing problems immediately. If information flow slows or clogs, serious problems can develop, sometimes to a point of almost complete operational paralysis. For this reason, the communication system of an airline represents one of its most important elements, commanding a considerable amount of investment in manpower, equipment and circuitry.

Conclusion

The availability to the airline industry of the industry bulk communications system provided through and

managed by the industry's communications company, ARINC, is vital to the public service of the airlines, and the public interest requires that it continue to be available..

DOW JONES & COMPANY, INC. - COMMENTS

Dow Jones & Company, Inc. ("Dow Jones"), by its attorneys, Patterson, Belknap & Webb, pursuant to paragraph 39 of the Commission's Notice of Inquiry and Proposed Rule Making ("Notice"), 39 F.R. 25351 (July 10, 1974) as amended 39 F.R. 29008 (Aug. 13, 1974) and 39 F.R. 39049 (Nov. 5, 1974), hereby submits its comments on the issues raised in the Notice regarding nonprofit line-sharing, particularly regarding Dow Jones' current nonprofit joint use of an AT&T Series 3000 private line communications channel (FD 11959).

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I

INTRODUCTION: ISSUES TREATED HEREIN

1. In paragraph 31 of the Notice, the Commission requested interested persons to address a number of issues in docket 20097. After consideration Dow Jones has determined that it has sufficient information and experience at this time to respond only to the following issues:

2. Would the public interest be served by a removal of all restrictions on re-sale of private line services? What would the effect thereof be on:

* * *

c. Communications users: Discuss possible new services, new pricing structures, effect on cost of existing services, better communications management and stimulation of the use of the most efficient type of carrier for each type of service.

* * *

5. What is the justification for limiting the sharing of private line services to, generally, voice grade and under services and for requiring those desiring to effectuate a sharing arrangement to have a communications need of their own?

* * *

6. Would the public interest be better served by removing all restrictions on the sharing of private line facilities? If that would not be desirable, recommend necessary or desirable restrictions and justify any recommendations taking into consideration the effect of each on the carriers, other elements of the communications industry and the using public.

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7. What is the public need for sharing of private line facilities? Discuss any new technologies being developed which would make sharing more attractive, new user applications of sharing and the relationship between the need for sharing and the availability of facilities for resale. Specifically, what need for sharing would remain if all restrictions on the resale of private line facilities were eliminated?

* * *

11. Should the Commission regulate the sharing agreement made between customers and joint users and, if so, to what extent and in what manner? What reports should be required? Specifically consider possible guidelines governing the manner in which the cost of effectuating the sharing arrangement should be shared so that there is a clear distinction between sharing and resale?

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II

DOW JONES, A NEWS WIRE JOINT USER

2. Dow Jones engages in the business of gathering, preparing and disseminating news, statistical information and intelligence. It publishes the Dow Jones News Service (the "News Service"), the Dow Jones International News Wire, the Dow Jones International Banking Wire, the Dow Jones International Energy Wire (collectively, the "news services") and, through a subsidiary, the Canadian Dow Jones News Service. In addition it publishes The Wall Street Journal, The National Observer, Barron's National Business and Financial Weekly and, through a wholly-owned subsidiary, Ottaway Newspapers, Inc., twelve daily and five Sunday local newspapers variously located in New York State, Pennsylvania, Connecticut, Massachusetts, Michigan and Oregon. Also, Dow Jones and the Associated Press ("AP") jointly produce the AP-Dow Jones Economic Report, a daily international wire service specializing in distributing economic news outside the United States and Canada.

3. The Dow Jones news services provide simultaneous transmission of news over a single nationwide voice grade Series 3000 Type 3002 private line communications

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channel (FD 11959) directly to each subscriber in every major United States city and many smaller cities and towns. Dow Jones currently uses this line jointly with six other independent organizations. To serve subscribers, Dow Jones receives at its main editorial office in New York City news from its staff of reporters and writers in 21 bureaus located in major cities in the United States, Canada, Western Europe and Asia. News also comes to its central office from part-time correspondents, press news services including AP and United Press International ("UPI") and various stock and commodity quotation ticker services.

4. The news transmitted by the news services is basically corporate, financial and economic information which may be of direct interest to subscribers or their customers. In addition to a broad range of business and financial news, the news services carry representative stock quotations and averages at intervals to show the trend of the stock market, comments on the market and its movement, and information on news events behind such movement.

5. Like a newspaper and unlike most press news services, the Dow Jones news services disseminate news directly to at least 97% of their readership. The services are generally available at the prescribed rates to

anyone and are transmitted directly from a central point in New York City to the subscribing financial institutions, brokerage and investment houses, banks, corporate and business offices, hotels, clubs and newspapers located in approximately 700 cities and towns throughout the United States.

6. Members of the securities industry comprise the Dow Jones news services' primary customer group. As of February 1, 1974, securities firms provided approximately 77% of the total revenue to the combined news services and accounted for approximately 78% of the News Service printers in operation.

7. The news services are displayed on teleprinters, sometimes referred to as "tickers," on each subscriber's premises. The sole function of the printer is to enable the subscribing public to receive and read the news services. Dow Jones owns and operates the following conversion devices principally for its securities firm subscribers that do not require on-premises printers: (i) NEWSBOARD, a large electronic panel display for audience viewing, and (ii) DOWVUE, a cathode ray tube system for small-scale display. Additionally, Dow Jones provides station terminals not equipped by Dow Jones to third-party equipment vendors who display the News Service on their own equipment to certain members of the securities industry.

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III

DOW JONES' JOINT USE PRACTICES

A. Description of Telecommunications Services Used Jointly

8. Until June 13, 1974, the effective date of the Hi-Lo tariff, the Dow Jones news services transmitted all news from New York City to subscribers in the United States over FD 11959, the Series 3000 private line communications channel leased from AT&T. This circuit was used jointly with five independent organizations: J.J. Kenny, Inc.; Shearson, Hayden Stone, Inc.; National Catholic News Service; Paine, Webber, Jackson & Curtis Incorporated; and Knight Newspapers, Inc. In addition, Ottaway News Services, a service of Ottaway Newspapers, Inc., a wholly owned subsidiary of Dow Jones, also used the line. On June 13, 1974, Dow Jones took advantage of the Telpak end-link arrangement to reduce costs associated with Hi-Lo. Until August 19, 1974 the Dow Jones news services' transmissions were carried on FD 11959 in a Series 5000 Telpak, while the Ottaway News Service transmissions and all the transmissions of the five line-sharers were carried under the Hi-Lo tariff on an additional voice grade nationwide circuit (FD 22667) leased by Dow Jones. Since August 19, 1974, all transmissions have been carried on the single

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original voice grade circuit (FD 11959) under line-sharing with a Series 5000 Telpak end-link. As of November 1, 1974, Television News, Inc., has joined the group, bringing the total of line-sharers to six, apart from Dow Jones and its subsidiary, Ottaway. Collectively Dow Jones, Ottaway and the other six are hereinafter referred to as the "joint users"; the six alone are called the "line-sharers."

9. This circuit (FD 11959) is a broadcast multipoint channel transmitting on a one-way simplex basis, covering approximately 23,000 IXC circuit miles of voice grade data channels and having many exchanges and customer locations. The circuit is operated on a full-time basis, 24 hours a day, seven days a week. It has eighteen channels, each with a capacity of 75 Baud. Dow Jones now uses the equivalent of eight channels itself, leaving ten channels available for line-sharing, of which only seven are now shared. Knight Newspapers uses the equivalent of two channels; all other sharers use only one each.

10. Dow Jones also leases from AT&T Series 3000 FDA (alternate voice data) circuits for a store and forward communication system which, by computerized switching, transmits internal messages for gathering news and for advertising, production and circulation operations of The Wall Street Journal. In addition, Dow Jones leases other voice grade circuits primarily for tie line and foreign exchange services. None of these circuits is shared.

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History of Dow Jones' Joint Use

11. Following the Commission's June 1971 disallowance of the Press Association Rates applicable to teletype grade facilities, the Dow Jones news services transferred from teletype to voice grade facilities. Dow Jones made the change principally to offset the adverse impact of the Press Rates Case by taking advantage of tariff revisions permitting the derivation of telegraph grade subchannels from voice grade channels and the joint use of voice grade circuits.

12. In January 1972, the Dow Jones Communications Department made a survey of several leading brokerage houses, all of which were customers of the news services, to discover whether any had need for and were interested in the possibility of sharing a voice grade private line. No proposals or offers were made at this time; approximately half the brokerage houses surveyed indicated some need and some interest. The results were sufficiently encouraging to support a decision to undertake a technical facility study in March, 1972.

13. J. J. Kenny came on line as a sharer on September 25, 1972. Kenny, a customer of the news services, learned of the opportunity to share the line through contact with the news services sales department. Walston & Co. came on line on November 1, 1972 and went off line on December 31, 1973, because the firm went out of business. Shearson, Hammill (now Shearson, Hayden Stone) became a joint user on January 1,

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1973; Paine, Webber, Jackson & Curtis came on line on February 5 of that year. The three brokerage firms all became aware of the possibility of line-sharing with Dow Jones through the original January 1972 survey. In contrast, National Catholic News Service, which went on line on May 21, 1973, learned of the possibility of line-sharing with Dow Jones from a communications consultant it retained. Knight Newspapers, which went on line July 1, 1973, discovered the possibility of line-sharing in the course of discussions between Knight and Dow Jones. The most recent line-sharer to join, Television News, Inc., on November 1, 1974, came to Dow Jones on a referral from UPI.

14. Dow Jones has from the beginning accepted line-sharers on a non-discriminatory, first-come, first-served basis. The only criteria have been a communications need which can be met by the existing circuit system and the availability within the circuit of sufficient channels to meet that need. To date all the available channels have not been used, so that more line-sharers can be accommodated. Since the inception of the line-sharing arrangement the terms of the line-sharing contract have not materially changed except for the addition of the 10% administrative fee to be paid by the line-sharers to Dow Jones. (See paragraphs 20, 21 & 22, below.)

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15. The line-sharers joined with Dow Jones for two reasons: (1) to gain access to a highly reliable nationwide communications system otherwise inaccessible to them; and (2) to reduce communications services expenditures, either actually made or projected to be made. For example, before joining in the line-sharing arrangement National Catholic News Service could not afford to lease any communications wire services. And with line-sharing J.J. Kenny Co. has been able to add nearly eighty customers to its communications network that could not have been economically served before. (See letters in Appendix.) Dow Jones joined with the line-sharers to reduce its necessary communications costs. Unlike the line-sharers, under the circumstances existing after the Press Rates decision Dow Jones would have leased a voice grade private line even if line-sharing had not been a possibility. Without line-sharing Dow Jones would simply have had to bear the full cost of the excess capacity in the circuit.

C. Current Practice

16. Dow Jones leases the private voice grade circuit (FD 11959) from AT&T. Each of the line-sharers has agreed with Dow Jones to pay AT&T directly each month for each 75 Baud channel used. AT&T deducts a sum per channel from the charge that would otherwise be made to

Dow Jones and bills the line-sharers individually. However, Dow Jones is responsible to AT&T for the total cost of the circuit; if any of the line-sharers defaults, Dow Jones as guarantor must pay the sum.

17. Dow Jones now pays about $3/4$ of the actual monthly IXC channel charge. Dow Jones bears about $1/3$ of the proportional cost of the individual channels used by the line-sharers in addition to paying the full cost of the channels it uses itself. Dow Jones makes absolutely no profit on the monthly channel charge paid to AT&T. The only effect is to relieve Dow Jones of part of the expense for the circuit's otherwise unused capacity.

18. In addition to the monthly channel charge, each line-sharer pays to AT&T a monthly "joint user" fee and a monthly service terminal fee, for each terminal.

19. The line-sharers pay Dow Jones a monthly rental for each modulator-demodulator terminal. This fee covers Dow Jones' cost of original investment and periodic maintenance.

20. Since June 13, 1974, the line-sharers have paid Dow Jones an administrative fee of 10% of the total of the AT&T monthly channel charge, joint use fee and service terminal fee plus the Dow Jones equipment rental fee.

21. The 10% fee was established by Dow Jones in consultation with the line-sharers, all of whom agreed this amount would be reasonable. A percentage rate was chosen because no precise value can be readily determined for the

varying amounts of administrative services provided to a single line-sharer each month. The percentage fee has a reasonable basis in that the amount varies directly with the number of service terminals and channels the line-sharer uses. The overall administrative cost to Dow Jones in a given month can not be readily determined. The total amount paid to Dow Jones by all line-sharers in the form of this 10% administrative fee is less than the full cost to Dow Jones of administrative services performed.

22. The administrative fee reimburses Dow Jones for its expenditures in providing the following services: system design; order placement and follow up with AT&T for new circuits and equipment; billing costs, including dealing with AT&T on behalf of the line-sharers; and maintaining regular contact with the line-sharers. Prior to June 13, 1974 Dow Jones bore the cost of these services alone. This fee results in no profit of any kind for Dow Jones; it merely helps Dow Jones to realize the basic cost saving in line-sharing by passing along to the line-sharers some but not all of the legitimate administrative expenses of the joint use agreement. For each line-sharer this administrative fee is less per channel than that portion of the cost of each channel (about 1/3) which Dow Jones now carries (see paragraph 17 supra). Thus each line-sharer now receives each channel and Dow Jones' administrative services

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for less than the proportional cost of the channel alone.
Clearly Dow Jones administers the line-sharing arrangement on a cost-sharing nonprofit basis.

IV

LINE-SHARING AND RESALE OF LINES

A. Removing Restrictions on Resale

23. As the above discussion of the history and current practice of Dow Jones' line-sharing arrangements demonstrates, Dow Jones does not re-sell lines but only shares its one voice grade circuit (FD 11959) on a cost-sharing nonprofit basis. Dow Jones has no current or foreseeable interest in reselling lines for profit. Dow Jones only wishes to continue its current line-sharing arrangements in order to reduce the cost of leasing the voice grade channel circuit.

B. Removing Restrictions on Sharing

24. Although Dow Jones has no current need to share higher than voice grade services, Dow Jones generally does not believe that line-sharing should be limited, as at present, to series 3000 (voice grade) and under services. Line-sharing is a useful adjunct to the provision of services for profit which should be made more widely available, as long as the communications need requirement is retained.

C. The Communications Need Requirement

25. Dow Jones believes that the current requirement of AT&T's Tariff 260 that all joint users have communications needs of their own should be continued. Indeed, a communications need is a necessary prerequisite, although not the only one, for the existence of true nonprofit line-sharing.

D. The Availability of Sharing if Resale is Unrestricted

26. Even if all restrictions on resale of private line facilities were eliminated, line-sharing should continue to be available. Dow Jones doubts that line-resale organizations would offer services comparable to those now available under the line-sharing agreement to Dow Jones and its fellow joint users, at a comparable price.

27. Regardless of the availability of these particular services through middlemen, line-sharing should remain an option for users of voice grade, or any, private line services, because it adds a needed measure of economic flexibility to the nation's wire communications resources. Within limits line-sharing offers an important opportunity for users and potential users, whatever their resources and whatever the market conditions, to tailor wire communications to their own needs. In this respect,

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line-sharing helps insure that the nation's wire communications system remains a public resource rather than the private domain of a few vendors.

28. Furthermore, line-sharing permits a more efficient distribution of messages among communications systems resources, by eliminating duplication. Line-sharing allows excess capacity leased by one party to be filled by joint users. If line-sharing is disallowed and, as Dow Jones believes, middlemen prove unable to offer sufficiently diversified substitute service for profit, the nation's whole wire communications system could come under strain. Certain circuits might be crowded while others might be relatively unused.

E. The Effect of Eliminating Line-Sharing

29. Eliminating line-sharing would not by itself determine for Dow Jones whether it would continue to lease a voice grade line for its own use. However, Dow Jones expects that if line-sharing is eliminated its fellow joint users would be very seriously affected. The line-sharers would either have to purchase other more expensive services, or cut back severely or cease communicating by nationwide wire services altogether. For example, Knight Newspapers' costs would increase about 91%

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if it had to lease a series 1006 circuit for teletype. J.J. Kenny's costs would increase about 130% if it returned to an independent teletype grade circuit. National Catholic News Service would be forced to give up wire services altogether and use the mails to distribute its information. (See letters in Appendix.) All the joint users strongly oppose eliminating line-sharing of voice grade circuits.

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V.

REGULATION OF LINE-SHARING AGREEMENTS

30. Dow Jones opposes regulation of line-sharing agreements. The benefits, if any, of such regulation are outweighed by the costs to the joint users. The purpose of line-sharing is to increase communications users' access to communications resources and to save money for them. Regulation will only complicate the creation and administration of line-sharing arrangements and expend resources unproductively. The increased costs could even drive some present or potential line-sharers away from line-sharing.

31. The model regulations proposed in Notice paragraph 21 lack detail; their effect on Dow Jones' current line-sharing practices cannot be readily determined. The model states a very general standard of conduct, that line-sharing be carried out "only on a cost-sharing non-profit basis, prorated equitably." No enforcement mechanism is defined, apart from a requirement of notice at the initiation or termination of a line-sharing agreement and an annual reporting requirement. The proposed rules do not indicate the degree of detail expected, for example, in the financial statement required in the annual report.

32. The chief benefit of such requirements is disclosure of information to line-sharers, to AT&T and to the Commission. However, Dow Jones' fellow joint users and AT&T have been and are regularly kept informed concerning the line-sharing arrangements. For example, the line-sharers and AT&T have long known all the terms of the contract, the rates charged by AT&T and the fees charged by Dow Jones. The line-sharers know well what services Dow Jones performs for them. They know that costs per channel and services are the same for each. Dow Jones keeps the line-sharers informed about technical problems in the circuit and regularly notifies them of the availability of cities added to or deleted from the network. Dow Jones has been prepared at any time to disclose this information to the Commission and has done so, willingly, in these comments. Dow Jones expects in the future to continue to keep the line-sharers well informed, for the line-sharers and Dow Jones necessarily have close relations: what affects the communications line affects them all. Dow Jones also expects to keep AT&T informed. Further, Dow Jones expects to continue to be willing to inform the Commission concerning its joint use practices.

33. In these circumstances an annual reporting requirement lacks utility. The line-sharers already are fully informed. A reporting requirement will only create an administrative burden by complicating the joint use arrangement, regardless of its added cost in money.

34. The increase in costs can only be guessed. Assuming that only Dow Jones will be required to keep records and file annual reports, Dow Jones can make a rough preliminary estimate that annual costs to individual joint users could rise by \$2000 or more. If the line-sharers had to keep records and file reports themselves, or if legal fees became necessary, costs would rise accordingly.

35. An administrative burden and an increase of costs of the magnitude indicated may not cause Dow Jones or most of the line-sharers to stop sharing the line. For Dow Jones and most of the line-sharers such costs and administrative requirements cause concern because they produce nothing new or useful. Such administrative complexity and increase of expenses run counter to the whole spirit of line-sharing. They also raise the prospect that the burdens of regulation will grow, and as they grow, their impact becomes more significant. At some now undefined point the savings for Dow Jones will not justify continuing the line-sharing arrangement. Even before the impact of regulation becomes too great for Dow Jones, the burden of regulation could force some of Dow Jones' fellow joint users to discontinue line-sharing.

36. An increase in costs even at the level projected above could possibly halt the participation of National Catholic News Service in the line-sharing arrangement.

National Catholic News Service's annual surplus, only \$10,000 last year, could not readily absorb an additional \$2,000 or more in costs for regulation, particularly when current necessary operating costs are rising. As National Catholic News Service cannot afford alternative wire services, the regulation of line-sharing agreements could have devastating impact on its operations. (See letter in Appendix.) Other nonprofit organizations participating in other line-sharing arrangements may well be similarly affected.

37. The burdens of regulation outweigh the benefits for these joint users. An unnecessary procedure ought not to be introduced.

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VI.

CONCLUSION

38. Dow Jones agrees with the Commission ". . . that sharing arrangements . . . result in greater access to and fuller utilization of our nation's communications capacity and . . . their continuation is warranted." Notice paragraph 19. The current tariff is reasonable and in the public interest in this respect. The tariff allows nonprofit organizations, such as National Catholic News Service, or small enterprises, such as Television News, to obtain access to nationwide communications services at a price otherwise unattainable. Line-sharing introduces valuable economic flexibility into our national communications system.

39. Furthermore, Dow Jones' line-sharing arrangement does, as the facts demonstrate, operate on a cost-sharing nonprofit basis. The existing arrangement is simple, fair, efficient and economical for all participants. It does not need to be made less efficient, less economical and complicated in the pursuit of a greater fairness which cannot, in fact, be attained. The Commission regulates line-sharing sufficiently through

Tariff 260. Line-sharing as carried out by Dow Jones
and its fellow joint users needs no further regulation.

Respectfully submitted,

PATTERSON, BELKNAP & WEBB
Attorneys for Dow Jones &
Company, Inc.

New York, New York

December 9, 1974

A P P E N D I X

J. J. KENNY CO., INC.

55 BROAD STREET

NEW YORK, N.Y. 10004

RICHARD E. DONNELLY
VICE PRESIDENT AND SECRETARY

(212) 952-4592

December 5, 1974

Robert S. Potter, Esq.
Patterson, Belknap & Webb
30 Rockefeller Plaza
New York, New York 10020

Dear Mr. Potter:

We are a municipal bond brokerage firm - sometimes called a "broker's broker" - performing liquidity functions within the secondary market. Integral with a full range of services to our nationwide clients is our private teletype network going to 378 municipal bond trading departments of dealers and dealer-banks in 64 cities. This represents 270 customers in 63 cities outside New York City. Prior to our conversion to line-sharing arrangement with Dow Jones in late 1972, we had an AT&T circuit which allowed us economically to reach only a total of 300 customers - 170 customers in 40 cities outside New York City. After becoming a joint-user we have added 78 customers and 23 cities thereby broadening the marketability of municipal bonds.

In the event that line-sharing is no longer allowed, we would incur the substantial increased cost of again leasing a teletype grade circuit from AT&T. The estimated costs furnished us by AT&T indicate a monthly increase of approximately 130% exclusive of again paying for installation of teleprinters! The result of this would be the termination of no longer economical service to members of the municipal bond industry and, therefore, the institutions are individuals they service in various regions of the country.

If the line-sharing agreement with Dow Jones becomes subject to regulation by the Federal Communications Commission, we cannot predict the result with certainty. Our current estimates of the increase in our administrative overhead and in our share of Dow Jones' increased costs indicate that we could continue to share the line in spite of the greater expense. We do not want to use such additional resources for non-productive purposes. We are against increased bureaucracy, and we are quite happy and satisfied with Dow Jones' administration of the line-sharing agreement. Dow Jones has been both efficient and effective.

Very truly yours,


Richard E. Donnelly

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KNIGHT NEWS WIRE



Knight Newspapers • New York Daily News • Chicago Tribune

Dean H. Schoelkopf • *Editor*

321 West Lafayette Boulevard, Detroit, Michigan 48231 • (313) 222-5174

. 1030

November 30, 1974

Robert S. Potter, Esq.
Patterson, Belknap & Webb
30 Rockefeller Plaza
New York, New York 10020

Dear Mr. Potter:

Knight-Ridder Newspapers, Inc. wishes to inform Dow Jones & Company, Inc. of the effect on it of eliminating line-sharing or of regulating the current line-sharing agreement between Dow Jones and Knight-Ridder.

Knight-Ridder publishes 35 daily newspapers. Its subsidiary, Knight News Wire, operated in partnership with The Chicago Tribune and The New York Daily News, transmits news data to the partner newspapers and to outside subscribers as well. Prior to its line-sharing arrangement with Dow Jones, Knight was party to a line-sharing agreement with The Chicago Tribune and The New York Daily News for mutual exchange of news data but found it not economically feasible to sell to outside subscribers. Upon entering the line-sharing agreement with Dow Jones on July 1, 1973, the Knight News Wire became able to expand its service to outside subscribers and substantially to reduce its communications costs.

Eliminating line-sharing would require the Knight News Wire to lease from AT&T for independent teletype service a series 1006 circuit at a cost increase of approximately 91% over the costs of its current system. An increase of this size would be severely damaging to the Knight News Wire. As a relatively new enterprise it would find it most difficult to absorb the sharply increased costs associated with independent line leasing and at the same time fears the effect of an attempt by it to pass on these increased costs to recession-conscious publishers.

(ii)

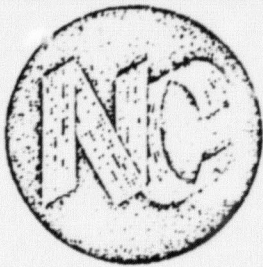
Current information suggests that Knight probably could continue to share the line with Dow Jones if the existing line-sharing agreement becomes subject to regulation. However, we see nothing to gain from such regulation. Dow Jones has disclosed to Knight-Ridder all relevant information regarding the line-sharing agreement. Dow Jones treats Knight fairly and has been a good administrator of the agreement. Knight-Ridder opposes spending money on useless regulation.

Very truly yours,

Dean Schoelkopf

Dean Schoelkopf

DS/kh



A. E. P. WALL
DIRECTOR and EDITOR-IN-CHIEF

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December 2, 1974

Robert S. Potter, Esq.
Patterson, Belknap & Webb
30 Rockefeller Plaza
New York, New York 10020

Dear Mr. Potter:

I have watched with interest the Federal Communications Commission's growing concern with line resale and line-sharing. I felt it important to write to your firm, as the attorneys representing Dow Jones and Company, regarding National Catholic News Service's line-sharing agreement with Dow Jones.

Let me begin by explaining the function of the National Catholic News Service. We perform for Catholic newspapers and periodicals the same service that Dow Jones performs for the financial community, that United Press International and Associated Press provide for the daily press, and that Commodity News Service provides for the commodity market. We have for 52 years been the largest gatherer and distributor internationally of news of a Catholic nature. We are a division of the United States Catholic Conference, which is the civil corporation through which bishops of the United States Roman Catholic Church provide support on a national and international basis for their local diocesan programs in areas that span the gap from family services, education and news to immigration. As a division, our funds, which come from Catholic periodicals and newspapers and not the bishops themselves, are very limited. For 51 years, our service was distributed by mail. It was the only service we could afford. Mail service has continued to deteriorate. We have long been aware of the tremendous potential of leased wire, but the cost and our limited funds had kept us away from such a timely, modern method of news and information delivery.

Thus, when we learned that the Federal Communications Commission had permitted joint use of wire transmission systems under Tariff 260 we were elated. At last this modern, invaluable method of transmission would be economically feasible. To give you an idea of the impact of line-sharing, if we leased a type 1005 teletype grade circuit our costs would be about 210% higher than they are under line-sharing. Such a saving brought the teletype system within our economic

grasp. We could not have done it otherwise. If the Federal Communications Commission now outlaws line-sharing, we will be forced to return to our former distribution method, the U.S. Mail.

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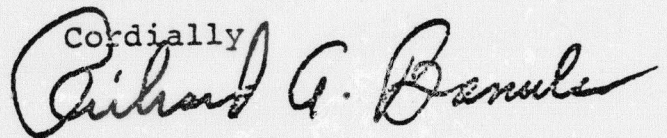
Regulation of the line-sharing agreement also could make it impossible for us to continue to use a wire transmission system. Our surplus last year on \$900,000 income was less than \$10,000. The estimated additional administrative cost, \$2,000 or more, could conceivably put us into the red, especially at a time when inflation is rapidly increasing our current necessary costs. If that proved to be true, we could not continue line-sharing. Nor would we gain anything from such regulation. Dow Jones is cooperative and helpful and keeps us fully informed. All of us line-sharers are dealt with equally by Dow Jones.

Somehow, I believe that it was the intention of the Federal Communications Commission that line-sharing would open up tremendous new possibilities for the distribution and dissemination of information. As always, the Commission, I am sure, was interested in how the public interest could best be served. I have shown you that the joint user provision made modern, fast and instantaneous delivery of news possible for the first time for the National Catholic News Service. I hope that I have adequately demonstrated also that regulation of the line-sharing agreement could possibly end our participation as effectively as an outright ban on line-sharing. Such regulation could wipe out a tremendous tool for small limited-income users such as ourselves.

Herein lies the reason for my writing you today. I cannot believe that the Federal Communications Commission would wipe away the tremendous good being done either by eliminating line-sharing or by making it difficult or impossible to continue.

Although we are not directly involved as a prime lessee under Tariff 260, I did feel that it was important for your firm as the representative of Dow Jones, and for the Federal Communications Commission, to understand all of the implications for the little guy.

Cordially



Richard A. Banules
Manager
Business and Field Services

Copy: A. E. P. Wall
Director and Editor-in-Chief
NC News Service

